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SOME RECENT ADVANCES IN THE TREATMENT OF PULMONARY TUBERCULOSIS*

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TULSA

The fundamental principles in the treatment of diseases of the lungs are the same that have existed for centuries, that is the triad: fresh air, good food, and rest. All the modern methods of treatment are based upon the extent and character of the disease and the method of obtaining the maximum amount of rest for the lung lesion itself. The X-ray has been a great boon to the study of diseases of the chest. Misguided is the chest specialist who attempts to treat disease of the lungs without the aid of the X-ray. It will show many conditions that cannot be found with the stethoscope and general examination. However we must not depend on the X-ray alone for the entire story. The X-ray should not make a diagnosis nor give the degree of healing or activity, however, serial plates will show the progress.

The treatment of any lung disease should not be undertaken without first securing a satisfactory stereogram of the chest, regardless of the physical findings and clinical symptoms. With an intelligent interpretation of the films with due consideration for symptoms, complications, and physical findings the method of treatment can be planned. After the routine bed rest and the usual dietetic and postural rest regime the more valuable methods are compression or local rest of the lung or diseased area by artificial pneumothorax, phrenicectomy, intrapleural pneumolysis, multiple intercostal neurectomy, thoracoplasty, and oleothorax.

ARTIFICIAL PNEUMOTHORAX

Artificial pneumothorax at this time is the outstanding method of treatment of tuberculosis. It is a known fact that 60% of the cases of active pulmonary tuberculosis should have artificial pneumothorax compression of the lung. The selection of cases for pneumothorax, and the indications for its use, should be based upon the condition of the patient and the extent of involvement and not upon the endeavor for good statistics.

Since the World war the therapeutic value of artificial pneumothorax in the treatment of pulmonary tuberculosis has become so well recognized that it is a part of equipment of practically every chest specialist in the world.

Many times artificial pneumothorax should be done when the operator finds the patient far advanced, both lungs involved, and very little chance of recovery without radical interference. It is indicated in all cases of cavities as the first method of choice to close the cavity and prevent the further spreading of the infection, in the cavity lung or contra-lateral lung, by the bronchial tree. In the ideal patient the contra-lateral lung should be relatively clear, however, with a progressive disease, great loss of weight, high temperature, cough, and profuse expectoration, pneumothorax should be instituted guardedly and cautiously in the active lung. Frequently the contra-lateral lung will improve when the more diseased lung is compressed. A free pleural space is essential for an ideal working collapse to be secured. Persistent or large hemoptysis is a definite indication for pneumothorax. Many lives have been saved by the prompt administration of artificial pneumothorax in cases of profuse, continuous, hemorrhage.

The use of pneumothorax in lung abscesses and bronchiectasis must be carefully considered and administered only in cases where there is adequate drainage to the bronchus or abscessed near the hilus. Most patients will see a marked decline in their temperature, cough, and expectoration after pneumothorax has been administered, however, there usually is some

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disturbance of the appetite with a slight loss of weight during the first few treatments. In large cavities, beneath the pleura, of long standing and an active infection in the contra-lateral lung pneumothorax is hazardous because more likely there will be pleural adhesions near the cavity and tuberculous pleuritis will subsequently develop by the tubercle bacilli permeating the cavity wall into the pleural space, or rupture of the pleural wall in stripping the visceral from the parietal pleura by the air.

In suitable cases of pneumothorax the first treatments are given in small amounts and at short intervals. The amount and intervals being increased to 500 to 700 c.c. of air and the intervals sometimes as much as six weeks. The course of treatments should run for two to four years. The writer has seen many patients return to eight hour a day work after three months treatment even when an entire lung was involved with cavitation.

Attempted or induced artificial pneumothorax may have some complication. Puncture of the lungs may cause slight hemoptosis, and embarrassment to the operator, but usually is not a serious condition. Pleural effusion occurs in about 18% of the writer's cases. This effusion frequently is of no consequence but if extensive should be removed. Effusion is most frequently noted where high pressure is used or pneumothorax done while the patient has a common "cold." Empyema is of serious consequence and usually results from an infection from the lung and most often a sub-pleura tubercular rupturing into the pleural space. Treatment should be by repeated aspiration and the injection of oil—Gomenol. Never do an open drainage except as a last resort. We find a few patients that have a sensitive pleura with reactions to the injection of air alone, then pneumothorax has to be discontinued. At present artificial pneumothorax offers the tuberculous the greatest ray of hope.

PHRENICECTOMY

Phrenicectomy is indicated in basal infection of tuberculosis, bronchiectasis, lung abscess near the base or hilus, and in cavities that cannot be closed by artificial pneumothorax, or where there are so many adhesions between the visceral and parietal pleura that air cannot be injected. The phrenic nerve is severed and the lower end extracted together with any accessory branches. Radical phrenicectomy will reduce the lung volumn from 20 to 30% with the immobilzation of the hemi-diaphragm and a rise of the diaphragm into the chest cavity. There is very little results obtained by the phrenicectomy when the diaphragm is fixed or adhered to the base of the lung and chest wall. There is also a lack of results when done in an acute exudative pulmonary tuberculosis. The writer has found that 90% of the cases operated had a great reduction in the cough within twenty-four hours after the operation. There is also a sense of relief in the chest in which the operation is done immediately following the operation with a significant diminution of sputum. Although phrenicectomy is more valuable to close cavities at the base the writer has seen many large cavities at the apex closed by the operation. We must remember that phrenicectomy should be used as an adjunct or substitute for pneumothorax when artificial pneumothorax is impossible and never to supplant artificial pneumothorax.

INTRAPLEURAL PNEUMOLYSIS

Two methods are used in doing an intra-pleural pneumolysis, the open method which is done by the removal of a section of rib and dissecting large adhesions of the chest wall and can be used in large adhesions that cannot be severed by cauterization, or closed method. Frequently intra-pleural pneumolysis will give an effective pneumothorax collapse and close cavities where pneumothorax alone or phrenicectomy will fail.

The closed intrapleural pneumolysis as done by the Jacobaeus method or cauterization is the operation of choice in small adhesions that prevent the closing of cavities or complete collapse of active tuberculous lung tissue by artificial pneumothorax. Cauterization is done under local anesthesia and usually requires from one to two hours. A thoracoscope, similar to a cystoscope, is inserted near the adhesions. Care must be used to avoid large blood vessels and lung tissue in the adhesions. Cauterization can be done and pneumothorax continued when the patient is in too poor condition for thoracoplasty. Pleural effusion and empyema is a frequent complication and must be carefully guarded against. When this complication

appears it should be treated as the same complication in pneumothorax.

Intra-pleural pneumolysis should not be done until pneumothorax has been used for several weeks and the pleura has lost its acute engorgment.

MULTIPLE INTERCOSTAL NEURECTOMY

Multiple intercostal neurectomy preceded by a phrenicectomy in many patients will give amazing results. It is surprising the amount of immobilization that can be acquired by this method without losing the framework of the chest. The operation is the simple removal of about one inch of the intercostal nerves in a position just external to the rib angle. The operation can be done under local anesthesia and the time required is usually from one to two hours. Paralysis of the second to the tenth intercostal nerves, inclusive, is usually sufficient. It is important that the patient be told before the operation the results to be expected and the experience they will have during and after the operation. During the operation a great deal of pain can be avoided if each intercostal nerve is injected five to ten minutes before it is severed with 2% novocain. Usually immediately after the operation the patient complains of a tight feeling in the chest and a burning numbness throughout the operated side. These sensations usually become less as time goes on. Also after the operation the power to cough and expectorate is greatly lessened.

Great care must be used in selecting the patient for this operation as well as the pre and post operative management. Each patient will be a problem in himself, as in all other methods of treatment. The indications are the same as those for artificial pneumothorax, thoracoplasty and phrenicectomy but cannot supplant any of these operations as each has a field of its own. There are many patients that can have the multiple intercostal neurecotmy over the thoracoplasty because of poor general or cardiocirculatory condition or age, and because of the extent of the active condition in the contralateral lung that may advance or spread as a result of the profound effect of the thoracoplasty. The patient often is unable to withstand the prolonged general anesthesia for many reasons but can withstand the local anesthetic operation.

Intercostal neurectomy should not be considered when there is active advancing condition in the lung with profuse expectoration that the patient might not be able to raise because of the decreased power to expectorate and cause pulmonary stasis. Neither should it be done when there is dyspnea or extremely sensitive diseased myocardium.

THORACOPLASTY

Thoracoplasty has won a valuable position in the treatment of tuberculosis in cases of unilateral activity where other methods such as artificial pneumothorax, phrenicectomy, intrapleural pneumolysis and multiple intercostal neurectomy have failed. Thoracoplasty is usually done in two or more stages. A section of all the ribs from first to eleventh inclusive are removed. In view of the fact that all cavities should be closed by some means of interference thoracoplasty will often do it when other methods have failed. However, it is imperative that the contralateral lung be free from any activity and the patient free from any tuberculous complications. It has been of great value in cases where there is large perforations from the lung with subsequent infection and empyemias of the pleura. However, thoracoplasty should not be done until the pluera has been sterilized by the administration of oil—Gomenol. Thoracoplasty as a rule should be preceded by a phrenicectomy and less extensively done on the right side of the chest because of the right heart muscle being thinner and having less resistance to pressure produced by the removal of large amount of ribs. It is an operation not to be considered lightly, but will cure many otherwise hopeless cases.

OLEOTHORAX

Oleothorax is the injection of mineral or vegetable oil into the pleural cavity. The indication for its use are to avoid adhesions, close cavities or produce a more successful collapse when artificial pneumothorax is ineffective, to give more rigidity to the pleura when bulging of the mediastinum occurs in pneumothorax and to close the perforation of the lung in which there is empyemia or to sterilize fluid. According to Fountain's statistics about 75% of pneumothorax treatments are complicated by pleuritis, 22% result in fluid or empyema, however, the writer has observed in his own personal experience that about 18% develop fluid or empyema. Pneumothorax is continued to be used in pleurisies that are non-toxic to the patient and recurrence of the

fluid when aspirated. Many times the injection of air by pneumothorax causes a severe reaction followed by malaise and a temperature. This is found in patients that have been taking pneumothorax over a long period of time and oleothorax can be substituted safely with no reaction in the majority of cases. The use of oleothorax for lung perforations is very limited. In a small perforation as the result of the breaking of adhesions, rupture of the visceral pleura, or the small subcortical vomica not connected with the bronchus justifies an oleothorax. Valvular perforations where the air can escape from the lung into the pleural space and not return into the lung will be benefited by oleothorax. Cavities that are held open by small adhesions with positive pressure pneumothorax are seldom closed by oleothorax. In rare instances for some reason there is a rapid absorption of air in pneumothorax and a collapse cannot be obtained—oleothorax is indicated. Oil Gomenol is indicated in tuberculous pleuritis with effusion. The writer has had two cases of this type that developed severe reaction by the use of a vegetable oleothorax and was compelled to discontinue this treatment.

SUMMARY

To sum up the results obtained by the various methods of treatment it seems that compression represents the best recent advance. There is no treatment to equal artificial pneumothorax in the cases where it can be successfully administered, and no other treatment should be substituted or used until pneumothorax has been tried. A patient with an open cavity and tubercle bacilli in the sputum has about one chance in five to live as much as three years unless the cavity is closed or sterilized by some method. Furthermore ridding the sputum of tubercle bacilli will save the infection of many children and others with whom they come in contact. The physician who would treat tuberculosis must keep informed of the advance in various methods for each month brings new experiences and methods of immense value to the public and patient.

VOCATIONAL REHABILITATION OF TUBERCULOUS PATIENTS

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TALIHINA

Rehabilitation, restoring to a former capacity or something approximating a former capacity, is a problem and task which begins the day tuberculosis is diagnosed. Our first thoughts concerning rehabilitation are those relating to vocational guidance and instruction. That, however, is not the case, for the whole treatment of tuberculosis from the first day of convalescence up to the time one is able to maintain himself or herself without danger to future well-being is a problem of rehabilitation. Therefore, we may roughly divide rehabilitation into two divisions—first, the phase in which treatment and care is of greatest consequence, and second, when vocational guidance and instruction can enter and serve as a therapeutic adjunct and be of future value to the patient.

To the present time, our efforts in Oklahoma have been restricted to what so many of us have considered the major question, that is, the first phase, treatment and care only. There is a real need for vocational guidance and instruction among the tuberculous in the United States—and in Oklahoma. At least 25% of the patients discharged from sanatoria yearly are dependent upon some social agency in getting back to work. This means that we have with us 25,000 in the United States who are economically dependent and who are unable to return to their former jobs and must have training for other positions.

In a survey of our own institution at Talihina we find 33% of the patients are amenable to vocational instruction of some description. The gravity of the situation can be partially seen when we realize that at least 33% of economically dependent persons will be forced to look for new forms of employment or find means of continuing their present training.

This, however, is not the most serious aspect. The worst comes when we find that 50% of the cases discharged as arrested from the sanatorium are dead within six years. This alone shows the inability of the patient to work out his or her own salvation. The vast majority of patients leave the sanatorium before an

arrest—so what is the actual toll taken by unwise selection of an occupation? It is palpable that those leaving before an arrest are not in as good physical condition as those who obtain arrested cases, so the mortality must be much higher. No figures are available, but a conservative estimate would be 70%. I say to you that next to an early diagnosis our most important and difficult hurdle is the selection of a vocation and the proper training connected therewith. If this phase is neglected our work is for naught.

After patients have left the sanatorium, few can afford the time or money to take up training which will make them self-supporting. It is demanded that they compete with able-bodied men and women. Being unfitted and in many cases not hardened to labor, a relapse occurs which spells finale to that episode of their lives. Not only are the months of care spent in a sanatorium wasted but the devasting moral effect causes them to lose the valuable self confidence and independence so necessary for one to become a self-supporting and useful citizen. The discouragement plus natural mental stasis, causes them to lose all ambition and aspiration, and they gradually pass into the class known by the rather rough but appropriate term, "Sanatorium Bums." It is with sadness that we find that about 50% suffer a relapse and come under this heading.

Since rehabilitation of tuberculosis patients begins with the finding of tuberculosis, the treatment is the first stage in this rehabilitation. Tuberculosis that is active and producing toxic symptoms requires bed rest, nourishing food, and open air if possible, and other treatments as required in the individual case such as artificial pneumothorax and phrenicexeresis, heliotheraphy and X-ray treatments. The length of time required for this treatment varies in each case and is determined by the reaction of the patient to the treatment. When the toxemia subsides and the chest findings improve, gradually increased exercise should be instituted, but exercise should be discontinued the moment it is found that it is interfering with the patient's resistance to tuberculosis.

The atmosphere surrounding the patients who are taking the cure is very important as is the esprit de corps. It is sometimes hard to create this atmosphere in a home, and in early toxic tuberculosis the patient can get this esprit de corps quicker in a tuberculosis sanatorium and learn how to regain his health as well as how to prevent others from becoming infected.

In judging when to increase exercise and when to decrease it, very close observation of each case is required. The patient cannot be properly instructed unless there is close supervision by the doctor. There should be close observation of the temperature, weight, pulse, and personal peculiarities of each patient. Too frequently a patient feels himself as if he were well and will attempt to do things that are injurious because he does not have sufficient knowledge of his actual condition.

If the physician has been successful in getting the full co-operation of patients and they have successfully mastered the rest cure, there comes a time when confidence as to their physical ability has to be re-instated, and there comes a stage of weeks and months during which the patients must be convinced they are able to do a certain amount and get ready to take their place in their communities again. Some patients fail to rehabilitate themselves at this time and become chronic invalids because someone did not understand how to bring them back to a confidence in their ability.

There sometimes develops a condition known as phthisis-phobia or an unreasoning fear of tuberculosis, and this fear cannot be very easily eradicated. After health is regained to the point where occupation can be re-established, it is sometimes necessary for a patient to change his vocation in order to stay well of tuberculosis. For instance, a mechanic may have to become a salesman or a carpenter take up some more sedentary pursuit. This sometimes requires months and years. We who are in tuberculosis work believe that our state sanatorium could be more economically operated and would benefit the most citizens were it considered more of an educational institution than a place to receive advanced cases of tuberculosis. If we should take only the advanced cases, they would be in the sanatorium ranging from a few months to years, and the institution would reach the stage where very few patients would be discharged during the year. The state would be taking care of just a limited

number while many citizens who could recover within nine months or a year were they given the oportunity would move out and give others chances. The schooling these curable cases would get would be carried with them to their homes and would benefit large numbers in each community, while the advanced cases remain in the institution for a long time and finally die without helping anyone except themselves.

Most of these advanced cases are sent to the sanatorium because of their financial condition. Since it is possible to care for only about one-third of the applicants, it seems reasonable that the state should expend its money where the most good can be accomplished. It is no longer a questionable fact that early stages of tuberculosis can be arrested and the arrested cases can be useful to their communities for many, many years, therefore, these early cases should be given first care by the state in order to restore them to health and to useful citizenship as soon as possibie.

We frequently receive telephone calls and telegrams saying there is an emergency case that should be admitted to the sanatorium at once. When we receive one of these calls we realize that we are about to get an advanced case of tuberculosis that has no hope for recovery and that the real emergency existed in this case some months or years before. It is not an emergency now but only a matter of time until the Grim Reaper gathers in the harvest.

It is very necessary that medical men acquaint themselves with tuberculosis and with the handling of active cases and the directing of cases who are inactive, because the incidence of tuberculosis in its various forms will range close to fifth or sixth of the mortal diseases in the communities. A working knowledge of the modern methods of treatment and the after care of tuberculosis is paramount if one hopes for success. Too many times we hear our medical men say, "That is a case of tuberculosis; I am not much interested in that disease," and pass it on by. Too many times we use every means at hand to have a moribund case of tuberculosis admitted to the sanatorium while we allow curable cases to progress because they are still able to be up and around.

Although the mortality rate has been reduced 50% within the last 25 years, tuberculosis is still the most destructive disease among the wage earners of the United States. The majority of deaths occur during a period of life when a person is of the greatest economic value. Although fourth (some say sixth) in the causes of death, the three more fatal diseases—heart disease, pneumonia, and cancer ranking ahead, arterio sclerosis and nephritis, these exact their toll from the aged—or persons usually over the age of 40.

Vocational rehabilitation to date has been a neglected field in Oklahoma. Tuberculosis, being a life-time problem, should be treated as such and we should not consider these patients disposed of when they leave the sanatorium. Rehabilitation is the weakest link in our fight against tuberculosis. Education has long been recognized as a public duty. Education and rehabilitation are a social problem which has been neglected because of expense. Our main concern is with those up to 25 or 30 years of age who cannot go back to their original work, the manual laborers, the young men or women who not only are apt but will have a reasonably long and useful life. The housewives, white collar men, the financially independent, and others of sedentary occupations need only counsel and advice as to their work as it does not demand strenuous physical exertion.

The after-care programs of the eastern sanatoriums cannot be followed by us because of several reasons: first, a difference in location; they draw from the large centers of population and upon returning home, being in a centralized group, can be watched and given personal supervision. Being near industrial centers arrangements can be made with manufacturers for shifts of part time workers under medical supervision. The personnel is different. We have large numbers of farmers—they of factory employees; our problems are dissimilar and our future course different.

The following seems to be the most logical solution:

During the long months at the sanatorium the patient has little to occupy his time and this is the period to start training. Patients should be interviewed and their aptitudes and inclinations noted. Their physical and mental capacities

should be determined and a course tentatively outlined.

For those lacking a common school education, a teacher should be installed who is capable of handling the first eight grades. A basic knowledge of this sort is necessary. Some of our adults are unable to read or write, and many have only about fourth or sixth grade educations.

This also suggests to us the need we have of a teacher for the children. During their tenure at the sanatorium that much time is lost from their school work. It could easily be carried on with little or no interference with their progress, in fact, nearly all state sanatoriums have school facilities for their children patients. The records made in these schools are amazing.

For those who have had these preliminary courses, a business curriculum could be installed and instruction given in conjunction with resting. Courses in shorthand, typing, and elementery bookkeeping could be initiated, and probably carried through successfully— but keep this in mind—if the sanatorium is to serve the purpose of schooling the individual in how to take care of tuberculosis, the problem of vocational rehabilitation will extend through a much longer time than this will require. This brings before us the realization of the need of separate organizations from the sanatorium in order to take care of those persons. Why complicate an already intricate institutional administration such as the sanatorium is, with the addition of such an inadequate and inefficient plan for vocational rehabilitation?

The only practical, and the ideal plan, is the establishment of subsidized communities, separate from the sanatorium, with the express purpose of vocational rehabilitation only. Ultimately, when the public realizes that this is the cheapest and the most efficient way of handling the problem of rehabilitation from the standpoint of utilizing spare time of the patient and the prevention of relapses, then will these communities be established.

In England, the subsidized industrial colony, Papworth, has found much support. Several experiments of this kind are being tried in this country. They involve expense, but there is a beginning realization that it is cheaper to provide this plan for the sanatorium graduate until he is able to resume full employment, than it is to pay for the inevitable relapse.

Papworth provides:

1. Treatment for the physical condition.
2. Training for a variety of trades.
3. Permanent employment under ideal conditions.
4. Living accommodations in model cottages or hotels.
5. Constant medical supervision.
6. Living conditions for whole families are provided.

In the industrial centers and the big eastern cities, it may be possible to place skilled and unskilled workers in full or part time work, but out here where we have few industries outside of agriculture, the problem is different and difficult. The Papworth plan is the only reasonably efficient answer. The sanatoriums which have been experimenting and making efforts at placement of patients in industry have met with only mediocre success. Part time jobs are few, and few employers wish employees with such limited physical capacities.

Why can't we in Oklahoma profit from these experiments and avoid wasting time and money in this direction and use the proven plan? It is practical and is a solution peculiarly adaptable for use in Oklahoma where we would have even less success in an effort to place patients in industry, which, in many cases, demands too much and the relapse occurs. This plan will work and is the most practical solution to the problem.

Now, let me summarize this problem of vocational rehabilitation in as few words as possible:

1. We all recognize the need for some plan to handle these ex-patients.

2. There is no need to spend time and money in the compilation of statistics and the initiating of an ineffecient and inadequate plan to be used in a sanatorium. When speaking of the sanatorium we are assuming that the patient stays there for only a period of schooling.

3. The establishment of subsidized communities would result in four things:

(a) We will be able to discharge patients earlier from sanatoria where beds are maintained at a cost of about $2.00 a

day to convalescent beds of some type which will cost less, but will be under the supervision of a staff of physicians and nurses. They will be employed for a time each day.

(b) Utilizing their spare time and gradually increasing the work capacity from week to week will enable them to reach an arrested state without danger of over exertion.

(d) There is practically no danger of reactivation under such a plan.

I would like now to offer you a suggestion which will be of great value in the handling of these persons in need of after care. With the exception of the efforts of several county units we have no after-care program. There is one corporation which realizes the monetary saving of such a course. After their employees are graduated from the sanatorium they are not placed in full-time employment immediately but are allowed to rest, take a limited amount of exercise and become acclimated at home for a period of a month or so. If, at the end of that time their condition is such that they may continue, they are allowed to work two or three hours per day for three or four weeks. They are then examined again and if in good condition allowed to go on full time for three months, having regular monthly examinations. After a year of full time duty they are considered as able to take care of themselves with the assistance and advice of the physician at annual examinations.

Now, the various civic organizations, Lions, Rotarians, Kiwanians, etc., could be of inestimable value if they would aid us in the placement of patients. Their cooperation and help would be of value to the patient himself and to the state or community. Each patient we discharge and who returns to his home in need of work could be sent to these organizations with a chart showing his vocation, or vocations compatible with his physical condition, together with his work capacity. If these organizations would assume this responsibility of assisting this individual in finding part time work not deleterious to his well being, it would be a great work. Such an organization would not only be doing the patient a favor but the state as well, in helping to eliminate the possibility of this person becoming a public charge.

DISCUSSION: *Dr. C. Doler*, Superintendent Western Oklahoma Tuberculosis Sanatorium, Clinton.

The subject of "rehabilitation" is most certainly one of vital importance to those of us directly concerned with the care and treatment of the tuberculous.

As was pointed out by the essayist, certainly our work comes to naught unless it is possible that we are able to return the individual to a useful place in society.

We preach and teach that tuberculosis is curable; but, to the casual observer in our state institutions of Oklahoma he would conclude that the incidence of tuberculosis is on the asendency and incurable; because he sees 62% of our beds filled with hopeless cases and learns that each institution has a long waiting list. It is an evident fact that we must render our patients "arrested" before we can return them to any place as a useful citizen. But the great outstanding handicap that faces us is the high percentage of far advanced conditions admitted to our state institutions.

To "cure" tuberculosis it must be in early, minimal stage—instituting treatment and care at that time—all other factors being equal and given a patient with average intelligence to carry on after we have pronounced them cured.

As mentioned by the essayist, the larger percentage of our admissions to the state institutions are an indigent class of people who, despite the advantage they might have in early diagnosis and instituting early treatment, are wholly unprepared to return to the same field of activity and carry on even though they become "arrested," for certainly the average case must return to the same avocation as a new vocation is most impossible to place before the average indigent case and that applies more directly to the tenant farmer. The farmer or farmer's wife or even the children of farmers can not have the advantage that people of other occupations can have in that the livelihood of this class of people is won by physical toil and not by mental toil.

The average farmer also has no income other than what he digs out of the ground which is an all important factor in the "rehabilitation" in the "arrested" or "apparently arrested" cases of tuberculosis; that one should have some means of support for two or three years after his sana-

torium treatment and education is an absolute essential.

I do not mean in this to say that the population of our sanatoria is wholly made up of the tenant farmer class of people as that is untrue. But, I do say that the tenant class of people are the indigent class of people in the state and is a class of people who cannot "rehabilitate" despite your sanatorium advantage in every respect. Wo do, however, have about 15 to 20% admissions who are not the indigent class of people and are able to carry on and our records will bear out that we return "apparently arrested" at least 15% of all admissions.

But, our records do not go any further to account for the manner and methods that they have assumed to "rehabilitate" themselves, only that about 5% of this class are people returning as re-admissions with a subsequent break-down. We know from this that they have not been able to care for themselves properly and carry on in order to hold up and eventually become "arrested."

The essayist mentioned "the community" propositions. This is the ideal thing; but, I am a little skeptical at this time, when the economic conditions of our state are so depressed that a program of this nature would gain prejudice in this respect to the point of not being carried out.

I do say that it is the most feasible and practical plan but if expected to be maintained by taxation I am candidly of the opinion that we are advocating something at least ten (10) years in advance of conditions. Nevertheless, many states and private institutions are going forward in a program such as outlined in the essayist's paper and I must say that Oklahoma with all of its commercial resources and splendid citizenry should awaken to the fact that unless we can offer something of this nature the work already being carried on is of little economic purport, and it is not showing a direct progressive spirit toward the great scheme as is accounted for and proven to be of merit by other states and institutions.

We are realizing that a program carrried forward to rehabilitate the extuberculous is largely the same that should be brought to bear that are borne in the direct treatment of the dismissed person; and, that of an intensive, educational program with clinics established throughout the state for the purpose of examining and observing as well as carrying out the treatment as started by the sanatoria.

THE TEACHING OF RADIOLOGY TO INTERNS

James T. Case, Chicago (Journal A. M. A. March 19, 1932), states that it is evidently quite necessary, if interns are to be given x-ray instruction, to formulate a definite program which can be followed out. He enumerates some of the things he believes it essential for an intern to learn about the x-rays thus: (1) the nature and origin of x-rays and of secondary radiation, and the physical and biologic laws that apply to them: (2) the scope of roentgen examinations: (3) fluoroscopic control of the reduction of fractures and dislocations and in the removal of foreign bodies; (4) roentgen interpretation; (5) roentgen terminology, and (6) therapy. Circumstances will determine how far such a program can be carried out in the individual hospital. In large hospitals, with internships of from eighteen months to two years, it is quite reasonable that a portion of this time be given to the roentgenologic department, each intern spending a while in that department as a participating assistant. Such a stay should be for not less than two months, and three would be better. The practice of assigning an intern to the x-ray department instead of a place on a rotating service should be condemned; no fellow in the roentgen department should be accepted until after having served his regular internship, and preferably after a few years of general practice. Failure to observe this precaution results in unbalanced training, which soon becomes evident in the practical work of the fellow. In some hospitals the interpretation is done at the same time during which the members of the attending staff are making their rounds, so that it is difficult for the interns to participate in the reading of the roentgen examination. In such cases it is feasible to arrange a certain hour at the close of the forenoon or at the end of the day for revision of some of the more interesting of the x-ray cases of the day. It is also possible for the staff to arrange that the roentgenologist shall give a series of systematic lectures and demonstrations covering the x-ray instruction deemed necessary. Much good will have been accomplished if the intern on leaving the hospital can carry with him a thorough appreciation of the scope and limitations of the roentgen examination in various disease conditions, its value and dangers in the control of fracture and foreign body work, and its place with radium in the treatment of many benign lesions as well as in the management of malignant disease.

ARTIFICIAL PNEUMOTHORAX IN PULMONARY TUBERCULOSIS WITH SPECIAL REFERENCE TO THE CAUTERIZATION OF ADHESIONS*

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For the benefit of those present who may question the advisability of bringing a surgical subject before the section on general medicine, I should like to call attention to the fact that many of the surgical procedures now employed in the treatment of intrathoracic conditions were first conceived and put into practice by internists or phthisiologists. The intrapleural cauterization of adhesions was first practiced in 1913 by Jacobaeus, the ingenuous, professor of medicine at the University of Stockholm. Because of this unique invasion of the field of surgery by an internist, Professor Jacobaeus was made an honorary fellow of the American College of Surgeons at its annual meeting in 1921.

While this subject is purely surgical, the patient suffering from pulmonary tuberculosis never ceases to be a medical problem and as a rule surgery, if wisely employed, is sandwiched in between long periods of routine medical management, preferably institutional management. The latter statement is deemed justifiable because these cases usually require the closest observation and the most discriminating diagnostic scrutiny in order to avoid hasty or unwarranted conclusions. There is such a wide variation in many cases between the degree of anatomic involvement and the symptom complex, the prognosis is often exceedingly difficult and can be properly made only after long continued observation and the repeated application of the various diagnostic methods, including serial x-ray studies. In the ultimate, the value of such a diagnostic survey will vary with the experience and judgment of the phthisiologist.

It might well be said that any surgical operation for the purpose of bringing about collapse of the lung is a mere incident in the therapeutic management of pulmonary tuberculosis and is usually an attempt to supplement the routine rest cure in bringing about additional local rest and the closure of cavities. Since the International Congress on Tuberculosis in 1912, artificial pneumothorax has been generally accepted as the most significant advance in the treatment of pulmonary tuberculosis during the past fifty years. This method of treatment is now thoroughly understood by all members of the medical profession, but the difficulties arising through the presence of pleural adhesions are not fully appreciated. In many cases it is impossible to induce artificial pneumothorax because of obliteration of the pleural cavity by adhesions. In other cases where free pleural space is found it is so limited by adhesions that collapse is rendered incomplete and the therapeutic value of the procedure is wholly or partially counteracted. As a rule, the adhesions are found where collapse is most needed. If the adhesions are string-like or band-like and it can be determined with reasonable certainty that they do not contain lung tissue or large blood vessels, they may be successfully severed by the Jacobaeus-Unverict method of closed pneumolysis. If the adhesions are too broad and extensive to be successfully cauterized without danger to the patient or if the band-like adhesions are found to contain lung tissue or large blood vessels, phrenicectomy combined with thoracoplasty should be considered as a means of securing the desired collapse.

The technique and the instruments employed in the cauterization of adhesions are to be described by Dr. Horace Reed in his discussion of this paper. The results of this method of treatment are clearly shown in the lantern slides which are now to be presented. In those cases where the operation proves successful, that portion of the lung held out by the adhesions and all cavities appearing in the uncollapsed lung tissue immediately undergo a certain degree of collapse and under the continuation of pneumothorax treatments, complete closure of cavities soon results. Exceptions may arise in cases where there is marked fibrosis with dense cavity walls, but the latter constitute such a small percentage of cases, it invariably seems wise to give the patient the benefit of the doubt.

The accompanying pictures (Figures 1 and 2) chosen from those cases illustrated by the slides will furnish an adequate idea of the prompt results obtained.

As stated above, this operation is in-

*Read before Section on General Medicine, Annual Session Oklahoma State Medical Association, Tulsa, May 24, 25, 26, 1932.

dicated in pulmonary tuberculosis when string or band-like adhesions interfere with collapse of the diseased lung, especially when on account of imperfect collapse cavities remain open and where other conditions are such that successful cauterization of the adhesions will improve the patient's chances for recovery. It is also indicated in cases where satisfactory collapse has been accomplished in spite of adhesions yet requiring the maintenance of intrathoracic pressure sufficiently high to cause uncomfortable sensations in the thorax and to justify the fear of lung rupture through the constant tension on adhesions. In these cases, diaphragmatic involvement through adhesions or downward pressure associated with digestive disturbances may be sufficient to indicate cauterization.

Contraindications are few, in fact they are about the same as the contraindications for artificial pneumothorax and in the light of accumulated experience, the latter have almost reached the vanishing point. However, acute pleural exudate or acute pyothorax should be considered as contraindications. The presence of a chronic serous exudate does not constitute a contraindication but the fluid should be aspirated before cauterization is employed. Chronic purulent exudate should have preliminary treatment with oil of gomenol and then aspirated before cauterization. Our series of successfully treated cases include these two types.

Among the postoperative complications may be mentioned the following. Simple serous exudate in approximately fifty per cent of the cases. In our experience this complication has been no more troublesome than in the ordinary course of artificial pneumothorax. Purulent tuberculous exudate may occur in ten to twenty per cent of the cases. Purulent nontuberculous exudate may result but evidently it is very infrequent. Either the purulent tuberculous or purulent nontuberculous exudate may occur when bronchial fistula results. Hemorrhage, which may prove to be a serious complication, is not likely to occur when the cases are wisely chosen. Severe febrile reactions are apparently infrequent but may follow extensive cauterization. Subcutaneous emphysema occurred in two of our cases, however, we feel that this can usually be obviated by including the deep fascia in the suture employed to close the small openings resulting from the introduction of instruments.

In closing this discussion, may I say that every case of moderately advanced and even every case of far advanced pulmonary tuberculosis should have a thorough diagnostic study, plus a period of observation with a view of determining whether or not artificial pneumothorax is indicated. If artificial pneumothorax is employed and adequate collapse is interfered with by adhesions found to be suitable for cauterization, this operation

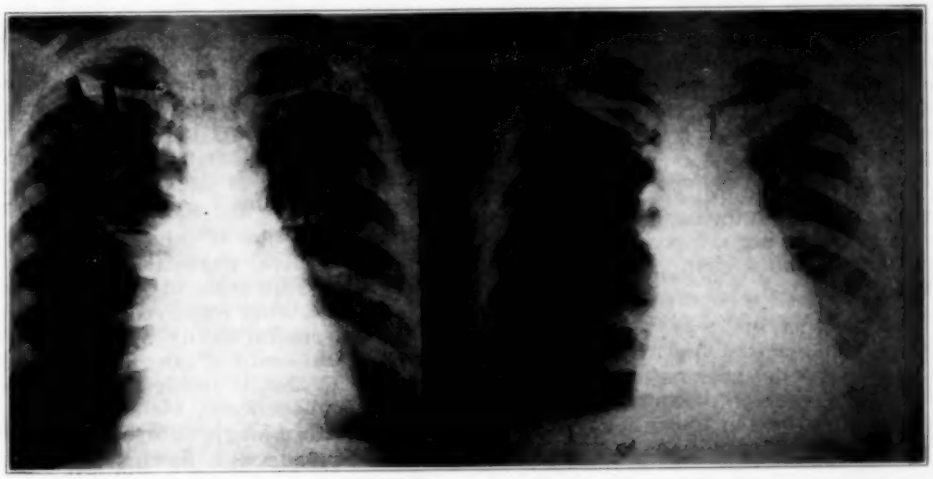

FIGURE NO. 1.

Advanced Pulmonary Tuberculosis with a large Cavity in the upper Lobe of the right Lung.
Artificial Pneumothorax unsuccessful because of Adhesions.

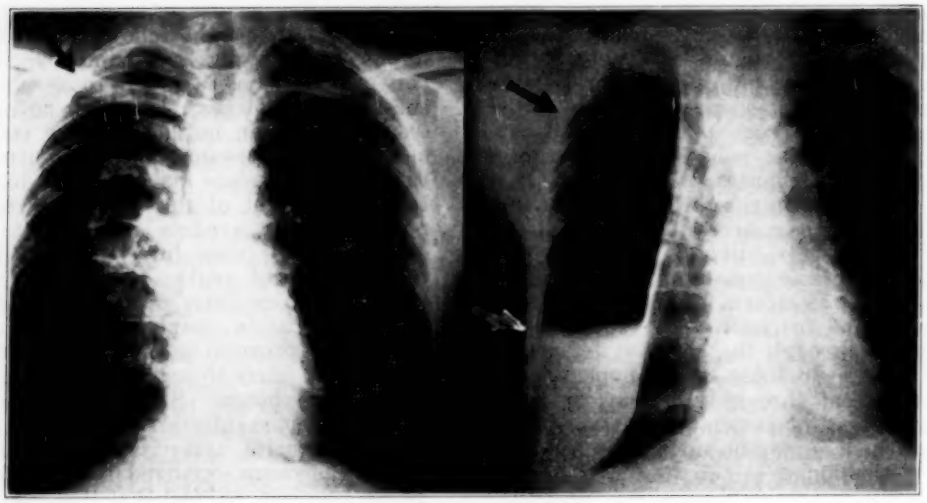

FIGURE NO. 2.

This represents a case of advanced bilateral Pulmonary Tuberculosis complicated by tuberculous Laryngitis. Under the influence of artificial Pneumothorax on the right with reflected sunlight for the laryngeal condition, there was marked improvement.

should be strongly urged. In case artificial pneumothorax is impossible because of adhesions, or in case the adhesions are of such a nature that cauterization is contraindicated, phrenicectomy and thoracoplasty should be considered. The scope of these surgical procedures is so far reaching in this disease, which is essentially a medical one, I feel that every general practitioner should be keenly alert to the therapeutic possibilities and untiring in his effort to give his patient the best possible chance for recovery.

In the first picture collapse of the right lung is almost complete but the large cavity immediately to the right of the sternum is held open by a number of string-like adhesions corresponding to the location of the arrows.

The second picture was made only a few days after cauterization of adhesions. The cavity is almost completely closed and the patient's chances for recovery greatly improved.

The first picture was made after the patient had received the maximum benefit from artificial pneumothorax. In spite of a fair degree of collapse of the right lung, cavities in the upper lobe are held open by band-like adhesions.

The second picture was made one week after cauterization of the adhesions. The upper lobe is now completely collapsed and the cavities have disappeared. The lower lobe is attached to the diaphragm, thus inhibiting collapse at the base. However, since the lower lobe is fairly free from pathology, this will not interfere with healing.

The lower arrow indicates the presence of a moderate amount of fluid. This often follows the operation.

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DISCUSSION: *Horace Reed, M.D.,* Oklahoma City.

The selection of cases suitable for the Jacobaeus operation is a responsibility resting entirely on the phthisiologist. The principal indication is an adhesion which by its traction on the lung prevents the collapse of a cavity under artificial pneumothorax. Whether such an adhesion can be severed safely is a problem for the surgeon to decide.

The operation is minor in magnitude, and the general physical condition of the patient is a question of little importance. The instruments employed are introduced into the pleural cavity between the ribs. Local anesthesita of novocain with adrenalin is all that is required for the operation. Skin incisions, 1 cm. in length, are closed with a single suture of fine catgut which should reach down to, and include the puncture opening in the deep fascia. If the fascia is not thus included, an emphysema may develop over a considerable area in the region of the wound. The

side of the chest in which adhesions have been severed is fixed by means of adhesive strappings, and the patient is urged to avoid, if possible, coughing, sneezing, or laughing for three or four days.

If a surgeon has had considerable experience in the use of the modern cystoscope, he will have but little difficulty in the manipulation of the instruments under vision within the chest. If he has not had this experience, he should practice on an artificial chest cavity constructed so as to resemble the pleural cavity with ribbons and strings for adhesions. In determining the location of adhesions, particularly the point of attachment to the chest wall, good stereoscopic films are essential. These should be studied just before the operation in order that the introduction at the point of attachment of the adhesion may be avoided.

The patient is placed on the operating table lying on the side opposite to the adhesions. A small but firm pillow is placed under the chest. The preparation area should include practically all the surface of the chest covering the affected lung. The thoracoscope is introduced preferably from behind. It must, of course, be in a free air space above the level of any free fluid in the cavity. Inspection, through the thoracoscope, of the cavity and the location of all adhesions, is done before introducing the cautery.

Not all adhesions can be safely cauterized. Some contain large blood vessels, while the lung cavity may project deeply into others. The point most desirable for the introduction of the cautery is determined after a thorough inspection has been completed. After its introduction the point is directed to each adhesion in turn under the guidance of vision. Each adhesion is again inspected, using the cold cautery point as a probe before turning on the current, If the cautery is too close to the parietal wall, there will be pain, and the danger of bleeding is greater. If too near the visceral attachment, a cavity may be opened. If there are no visible blood vessels, the adhesion should be severed on the parietal side of its mid point. Bleeding, if any, comes from the parietal end of the adhesion. We have had one patient with apical cavity in whom the adhesion was attached to a large vein at the level of the first rib. Obviously this was not cauterized. Later a thoracoplasty in which segments of the first to the fourth ribs inclusive were removed, brought about favorable results.

In burning large adhesions heat radiation may become painful. The current should be turned off, and filtered air allowed to enter through cannula provided for this purpose. This procedure at the same time gets rid of smoke which sometimes gets so thick as to interefere with good vision. Flabby adhesions, and such as are not interfering with the object of pneumothorax treatment, do not need to be disturbed.

We keep these patients in bed under sedation for three or four days before returning them to the sanatorium. There is usually an accumulation of fluid which is demonstrable for a few days following operation. Thus far we have had no bleeding of consequence, and no cases of infection of the pleural cavity as a result of operation. Like all other procedures which are employed in pulmonary tuberculosis, cauterization of adhesions does not of itself produce a cure. When definitely indicated, however, the operation does bring about changes which makes favorable progress possible, and often very rapid.

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PAINFUL ANEURYSMS OF AORTIC ARCH: RELIEF BY PARAVERTEBRAL INJECTIONS OF PROCAINE AND ALCOHOL

James C. White, Boston (Journal A. M. A., July 2, 1932), reports three cases in which successful relief of pain was obtained in advanced aneurysms of the aortic arch. He states that the intense suffering that may occur in this condition, as well as the cardiac pain of angina pectoris, can be relieved by paravertebral injections of procaine or alcohol. Procaine injection is of diagnostic value in determining which communicant rami transmit the painful impulses to the spinal cord. It may give relief over prolonged periods. Alcohol, when accurately injected, causes permanent destruction of the sympathetic rami. The author emphasizes the fact that the paravertebral injection of alcohol is a poor substitute for sympathetic ganglionectomy in any patient who is a reasonably poor operative risk, on account of the technical difficulty of injecting the alcohol with sufficient accuracy to be certain of destroying the ganglions or their communicant rami. However, in cases in which there are rapidly enlarging aneurysms, the dangers of cardiac decompensation, respiratory obstruction, or rupture of the aneurysm make a radical operation on the stellate and second dorsal ganglions quite out of the question. In these, however, paravertebral injection can be done with reasonable safety and a good chance of lasting relief of the chief complaint—pain. While actual prolongation of life is not to be expected from the relief of pain, it may be brought about indirectly by permitting the exhausted sufferer to rest and sleep in relative comfort.

BLOOD STUDY AS AN AID IN THE DIAGNOSIS, PROGNOSIS AND TREATMENT OF PULMONARY TUBERCULOSIS

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NORMAN

The blood picture in acute infectious diseases is familiar to all of us. In acute cases, both surgical and medical, we never fail to have proper blood work done, but seldom do we ever consider the blood in some of our chronic diseases; particularly has this been true of pulmonary tuberculosis.

Within the last few years, however, many interesting developments have arisen and among these developments are some important facts, which in the future will clear up some of our tubercular problems just as much so possibly as the X-ray has aided in the past.

Back as far as 1896, Holmes discovered that there was a definite relation existing between the leucocytes and a patient's resistance to tuberculosis. In 1900, it was discovered by Archard and Loeper that the monocytes were increased in human tuberculosis. Later on such eminent men as Schilling, Ponder, Piney, Arneth, Cunningham, Flynn, Medlar, Sabin and others have contributed many important facts in the blood picture of the tubercular. Cunningham and Sabin worked for years on the mononuclear leucocyte which they found to be increased in active tuberculosis. They found that these mononuclears had their origin in the reticular cells of the spleen and bone marrow and that these cells rushed to any active tuberculous process. Later on in 1927, Medlar and his co-workers found that this mononuclear played the chief role in the formation of the primary epitheloid tubercle. They also found that the neutrophiles came to the scene of action after the mononuclears had undergone necrosis, following an unsuccessful attempt to combat the infection. These neutrophiles through their proteolytic enzyme tend to liquify any necrotic material which gives rise to suppuration. If the neutrophiles are killed incomplete digestion of the dead connective tissue ensues and typical caseous material results.

These same men found that the lymphocytes are the cells principally concerned with healing tuberculosis. If the healing occurs early with the destruction of the tubercular bacilli the lymphocytes alone take part. If, however, healing occurs later after the suppuration and caseation have taken place, the lymphocytes are aided materially by the monocytes in the healing process. (Flynn)[1].

In the study of pulmonary tuberculosis, it has been noted for several years that the cases with high lymphocyte counts more frequently recovered than the ones with low lymphocytic counts. It has also been noted that active cases have an increase in the mononuclears and as a general rule the higher percentage of mononuclears the poorer the prognosis. When there is a gradual increase of lymphocytes and gradual decrease in the monocytes, one can usually wager that there is an improved pulmonary condition. On the other hand if the monocytes are increasing and the lymphocytes are decreasing you are safe in telling the patient there is a spreading of the infection. Another factor, which has been definitely proved, is that an increase in neutrophiles with a decrease of lymphocytes points to an extension of the pulmonary involvement. On the other hand when the neutrophiles are decreasing and lymphocytes increasing favorable progress is being made by the patient.

After years of experimental study, Sabin, Cunningham, Medlar and Castlin have interpreted leucocytic pictures in active tuberculosis as follows:

1. A high monocyte percentage when accompanied by normal or a low lymphocytic percentage, suggest an active proliferative lesion.
2. A high neutrophilitic percentage suggests an exudative lesion.
3. A high lymphocytosis usually means a healing lesion.

Arneth, Shilling and others have laid great stress on the number of segments or nuclei found in the neutrophiles.

After years of study they noticed that their active tubercular patients had fewer segments in their neutrophiles than normal individuals. In order to arrive at some conclusion, they divided the neutrophiles into those having one, two, three, four and five segments respectively. They found that the more active and toxic the

patient, the more neutrophiles had one and two segment nuclei. As the patient's condition improved, the segments increased. It might be well to state here that there is little value in one blood examination, but is one of much importance when done frequently at regular intervals.

During the past two years a great deal has been written about blood sedimentation tests in tuberculosis. This test is most accurately described by Dr. Cutler[3] in the American Review of Tuberculosis, (March, 1930). The Cutler tubes and graphic charts are used exclusively in this work. Five c.c. of blood is drawn and mixed with ½ c.c. of a 3% solution of sodium citrate. It is then placed in the graduated sedimentation tube where the cells are permitted to sediment. As these cells sink to the bottom of the tube, it is easy to read on the scale of the tube the amount of clear serum above. The tube is read every five minutes and a line is drawn on the chart representing the rapidity of the fall. The more rapidly sedimentation takes place, the more active and toxic the patient. Dr. Cutler states that the sedimentation test is the most valuable single means of estimating activity in pulmonary tuberculosis. He believes it to have an accuracy of at least 94%. It is of inestimable value in completing a diagnosis of pulmonary tuberculosis in that it measures the constitutional disturbance that the disease is producing.

In our experience, in a limited practice we have found blood study to measure the activity of our tubercular patients as accurately as the stethescope and the X-ray. We believe it to be of real value in the routine practice of diagnosing tuberculosis. Many noted tubercular men of today think it is just as important as the stethescope and X-ray and physical examination.

To sum up, we believe that thorough physical examination is imperative at regular intervals in all cases of pulmonary tuberculosis, that the blood studies just described are not by any means specific tests for tuberculosis but rather an adjunct to the other examinations, and is a reliable factor in rendering a prognosis, and an index as to the response to treatment.

We further believe that the case of active pulmonary tuberculosis which is improving will have a gradual rising lymphocytic count, a gradual lowering monocytic count, his ratio between the lymphocytes and the neutrophiles will be gradually decreasing, his neutrophiles will be gradually taking on more segments, and his sedimentation time will gradually lengthen. We furthermore believe that the physician is losing one of his most valuable prognostic factors, and guides to therapy in the treatment of an active pulmonary tubercular, when he fails to keep a constant check upon the patient's blood picture and sedimentation time. Again we should like to insist that a single blood study is usually worthless, but to be of value should be done weekly, or at regular intervals—say with the monthly check-up examination.

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RESULTS IN CHOLECYSTECTOMY, WITH ESPECIAL REFERENCE TO SYMPTOMATOLOGY AND DIAGNOSIS OF CHOLECYSTITIS

M. F. Dwyer and G. A. Dowling, Seattle (Journal A. M. A., Feb. 27, 1932), believe that chronic cholecystitis is the most frequent cause of gastric symptoms. The diagnosis of this condition by the correlation of clinical, roentgenologic and laboratory observations has reached a high degree of accuracy. Nearly one half (42 per cent) of their patients receiving a diagnosis of chronic disease of the gallbladder are considered surgical patients at the time the diagnosis is made. That the removal of the gallbladder of these patients is a satisfactory procedure is manifested by the fact that 79.7 per cent state they consider the operation a cure for the symptoms for which they sought relief. The avoidance of certain foods is a common complaint of patients with diseases of the biliary tract. Sixty-eight per cent of the patients in the authors' series stated that after the removal of the gallbladder they could eat without discomfort certain foods which before the operation caused them great distress. Symptoms of dyspepsia, especially gas and belching were either entirely relieved or greatly benefited in 80.3 per cent of the cases in which operation was performed. The surgeon should not be hasty in deciding against removal of the gallbladder because of its normal external appearance if he knows that disease of the gallbladder was diagnosed only after careful clinical, roentgenologic and laboratory examinations. Lack of the appearance of gross pathologic changes of the gallbladder in situ fails to outweigh careful clinical and laboratory deductions, and failure to remove the gallbladder in such instances is generally followed by a combination of the symptoms for which relief was sought.

FOREIGN BODY IN LARYNX—CASE REPORT

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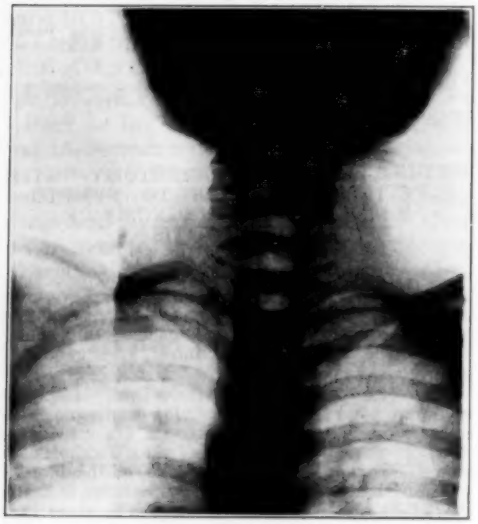
An Indian child, female aged 9 years, was referred to the clinic recently with a history of foreign body in lung.

Due to parents being unable to converse in English, no history was obtained. The attending physician stated the child had aspirated a foreign body about ten hours previously. When examined the child was having some difficulty in breathing, wheezing type of respiration was noticed with marked inspiratory indrawing of the supra-sternal notch.



Radiological examination disclosed the foreign body (large headed pin) fixed in the larynx, point up.

Direct laryngoscopy was undertaken without anesthesia, the large head of the pin could be seen apparently fixed between the cords, the shaft could not be seen. During the procedure the child struggled violently and the object disappeared from view. Breathing became better so a light general ether anaesthesia was decided upon.

Bronchoscopy disclosed the foreign body now lying in right stem bronchus, point up. The pin was removed by the point sheath method.

This demonstrates the type of case in which one should be prepared to do bronchoscopy, esophagoscopy and tracheotomy if necessary, and also to avoid the error of holding the patient up by the heels, no doubt if practiced in this case would have proven fatal, asphyxia resulting from foreign body becoming firmly lodged in the glottis.

AGE FACTOR IN ACTIVE IMMUNIZATION OF INFANTS AGAINST DIPHTHERIA

Julius Blum, New York (Journal A. M. A., May 7, 1932), undertook an investigation to determine the proper age when active immunization of infants against diphtheria should be instituted. An exceptional opportunity was afforded to carry out this work at the Home of Hebrew Infants, where the children are under observation for three or four years and can be repeatedly tested. For the past three years, on admission to the institution, all children, irrespective of age, and without a preliminary Schick test, were given three injections, one week apart, of toxin-antitoxin in 1 cc. amounts. Tests were performed at frequent intervals, varying from six months to three years after immunization, to see whether the reaction remained negative or positive. A negative reaction was evidence of successful immunization because at the close of observation the minimum age of the children was 15 months, at which time, one would expect from 80 to 90 per cent of them to have lost their inherited passive immunity. A positive Schick test was evidence of a failure on the part of the toxin-antitoxin to immunize because in cases in which inoculation has been done when the test is positive, immunization has been successful in about 95 per cent of cases at the institution. It was noted that the response to active immunization with toxin-antitoxin was least from birth to 3 months of age (about one-third failures), and greatest from 2 to 4 years of age (about 5 per cent failures). Of infants under 9 months of age, from one fourth to one third failed to respond to active immunization. The tissues of the infant respond best to active immunizing measures after the passive immunity inherited from the mother is lost. Infants under 9 months of age should not receive toxin-antitoxin without a preliminary Schick test. As a public health measure, it may be advisable to provide active immunization for infants from 6 to 9 months of age, if they cannot be inoculated at another time. All children should be given the Schick test from three to six months after active immunization. This precaution is often neglected. Only 2 of the 198 individuals who died from diphtheria in New York City in 1930 had received protective immunization. The reduction in mortality from diphtheria in the large cities of the United States in 1930 compared to that of five years ago is more than 50 per cent. The authors believe it is quite possible that the intensive campaign of active immunization in New York City during the past few years has been an important factor in the lessening of the incidence of the disease by about 70 per cent.

A BOTANICAL AND POLLEN SURVEY OF TULSA COUNTY AND SURROUNDING TERRITORY*

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The results of the study of the role played by pollen in the causation of hay-fever and asthma is now occupying an important part in the study of disease in general. This is in part because of the marked variability of plant life in different localities and the resultant diversified etiological factors. This later statement is borne out by such studies made in Abiline, Texas by Sellers and Adamson,[1] in which they emphasized the importance of the chenopodiales, (lamb's quarter, Russian thistle, spiny amaranth, pigweed, careless-weed, and western water hemp) as causes of summer and fall hay-fever and the relative unimportance of the rag-weed, the common cause of fall hay-fever elsewhere. There are other striking examples such as the role played by the pollen of mountain cedar,[2] which pollinates from December to February in central and eastern Texas.

This paper reports an effort to determine the pollen content of the air and the pollination period of the seasonal hay-fever producing plants in Okmulgee, Henryetta, Muskogee and Tulsa, and a detailed botanical survey of the trees in Tulsa county. The intensive study of the tree flora warrants a detailed account of our findings.

Briefly, the method for collection of pollen was as follows: A slide covered with a thin layer of vaseline was exposed twenty-four hours every day (exceptions, noted above) at each station. The slides were protected from rain by box-like shelters with the ends of the box removed.

The pollen counts are made by examining under the microscope an area of 1.8 square centimeters of the slide. This method is accurate from a practical standpoint and accepted as a standard by Durham and other authorities.

With the exception of sporadic cases of hay-fever in the gardener or florist, pollen must meet certain requirements in order to be incriminated as causes of allergic symptoms. Thommen[3] has advanced certain postulates which must be fulfilled "The pollen must contain an excitant of hay-fever; it must be wind-borne; it must be produced in sufficiently large quantities; it must be sufficiently buoyant to be carried considerable distances and the plant producing the pollen must be widely and abundantly distributed."

Among many species we feel that the pollen of the following trees complies with the postulates as causes of spring hay-fever; maples, elms, populars, oaks and possibly hackberry and pecan.

THE TREES

The maple tree (Acer saccharinum) was the first to pollinate, starting February 5th and lasting until February 27th. The first of March marked the appearance of the elm bloom. Among the four common spring pollinating species the American elm (ulmus Americana) predominated although there is much Chinese elm (ulmus pumela) in the city of Tulsa. Two other species grow here, ulmus fulva and alata. The elm season terminated about March 30th.

The importance of elm pollen as a complicating factor in hay-fever has been stressed by Black and Durham[4]. I believe, as they do, the importance of this tree is underestimated. In addition to the species observed in the spring they observed two elms, the red and scrub trees (ulmus serotina and ulmus crassifolia) which pollinate profusely in September. The latter is in this state, but does not grow in Tulsa county. We observed a few elm pollen granules on the slides exposed in Henryetta during September.

Spicewood pollinates the last two weeks in March but is not a significant factor.

Among the most profusely air borne pollinating trees are the pines. Pollination of these trees has been observed as early as March 1st and as late as June 15th. Fortunately, with the exception of an ally of the pine, the mountain cedar, (Juniperus sabinoides) it does not contain an excitant of hay-fever.

Among the poplars, there were four species (papulus deltoides, papulus italica nigra, papulus sargentii, and papulus alba) observed pollinating. The pollen appeared March 27th and continued for more than two weeks. So thickly planted in the city, they are obviously a definite factor.

During the first two weeks in April,

*Read before Annual Session Oklahoma State Medical Society, Tulsa, May 26, 1932.

Box elder, a member of the maple group, blooms. It is relatively insignificant as a hay-fever producing factor in Tulsa.

Three species of ash (fraxinus Americana, fraxinus Pennsylvanica and fraxinus nigra) pollinated more than two weeks, beginning March 27th. About the same time prickly ash (xanthoxylum clove derculis) bloomed, but the pollen of these trees are probably not factors, although in Missouri they are definitely important.

The enormous numbers of hackberry (celtis Mississippinis and celtis occidentalis) trees in Tulsa county lead us to believe that the pollen of these trees may be a factor. It is a close relative of the elm, consequently it is a good pollination and the pollen is buoyant. Thommen states that it pollinates in May. We concluded that his observations were made in New York. Here, the hackberry pollinates from April 4th until the 18th.

Following the pollination of hackberry came the black haw (viburnum rifidulum) making its appearance April 8th and extending its pollinating period to the 25th of April. Then came the hickory and pecan group. There are three species of hickories (carya cordiformis, carya alba, carya buckley) observed here, in addition to the pecan (carya pecan) trees.

The first three mentioned of the hickory group pollinates between April 18th and May 10th. It is surprising to note that pecan continued to pollinate until as late as June in the second week.

There were ten varieties of oaks observed in Tulsa county. Chief among these are the post oak (quercus stallata) black oak (quercus velutina), black jack oak (quercus marilandica), red oak (quercus rubra), bur oak (quercus macrocarpa), chinquapin oak (quercus muhlenbergii), and the pine oak (quercus palustus). Their periods of pollination extend from the 14th of April until the 5th day of May. These trees exceeded by far the number of any other genera.

Along the creek banks were observed the willow (xalis nigra) which bloomed from April 28th to May 19th.

The walnuts (Juglans nigra) are in rather insignificant numbers pollinating between April 28th to May 9th. The tree of heaven (arlantus altissmia) began pollinating as late as May 12th and continued for fourteen days.

It is to be noted that the slides were not placed for exposure before the 19th of March in Muskogee, Okmulgee and Henryetta. Consequently we have no data on the importance of maple, or the elms previous to that time. However, it is thought that the pollination periods of both maples and elms approximate the dates noted above on the Tulsa botanical survey. In Muskogee and Henryetta the elms pollinate until the 30th of March and the 5th of April respectively.

The pines pollinated from March the 19th until the first week in June. The pollen of poplars was not noted in Muskogee as early as the 23rd of March, while in Henryetta they were observed first on the 29th of March. They disappeared from the slides on the 10th of April in Muskogee but continued to appear until the 19th in Henryetta. The oaks appeared at the same time, about the 8th of April. In Muskogee they continued to pollinate until the 17th of May while in Henryetta no oak pollen was seen on the slides after the 12th. What has been said about the hickory, walnut and pecan groups here applies to the pollinating period in Muskogee and Henryetta.

The willows and walnuts began to pollinate about the 27th of April and extend through to the 16th and 9th of May, respectively.

Balyeat[1] has stated that the period of grass season begins about the 15th of May, particularly with the pollination of Bermuda Grass. Grass pollen was noted on the slides exposed as early as the first week of May. Although we have not made a detailed botanical survey of the grasses of Tulsa county, a survey is being made this year. However, we have observed blue grass (poa pretensis) and several other grasses of less importance pollinating the first week of May. There were also three varieties of plantain (plantago major, plantago aristato, plantago purshii) and several species of dock (Rumex verticillatus, Rumex crispus). Bermuda grass continued to pollinate through September. Among the amaranths there are four varieties observed here (amaranthus spinosus, amaranthus retroflexus and amaranthus palmeri), and the close relative western water hemp (chenopodium album) predominates. Although the chenopods and amaranths begin to pollinate profusely in the third week of June, we have observed pollen on the slides as

early as the first week in June. These continued to pollinate through the third week of September. From a botanical observation, we have noted the paucity of western water hemp in Tulsa county. The pollen of the chenopods and amaranths are so similar that we feel a differentiation of these two genera cannot be made.

Rag-weed pollen was observed in Muskogee as early as the 10th of August, in Tulsa on the 11th, in Okmulgee on the 12th, and in Henryetta on the 20th. Our observations extend only until the 30th of September but it is known that rag-weed pollinates in Oklahoma until the middle of October.

Charts one and two show the results of the botanical survey made here in Tulsa county. Charts three and four show the periods during which the important trees and plants pollinate in Muskogee. Charts five and six represent the pollinating period of the trees and plants in Henryetta. Charts seven and eight show the relative abundance of pollen on the slides exposed in Okmulgee from the 19th of March until the 30th of September. It has been noted above from the botanical survey that elm trees pollinated throughout the month of March. You will note a marked peak during the last half of the third week and during the first half of the fourth week of March.

Then a second peak represents the pollen of ash trees during the last week in March. Box elders, although relatively small in numbers, pollinate from the 29th of March until the middle of the second week of April. The rather broad peak represents the poplars during the last last half of the first week and the second week of April. The pines show three rather marked peaks on the 13th, 15th and 19th of April. However, pine pollen continued to be present on the slides as late as the 9th of May. Again, it is important to emphasize that pine pollen, with the one exception noted above, does not cause hay-fever because of the lack of an excitant.

The most important of all of the spring groups of trees are the oaks. You will note three peaks, the first of which is extremely high between the 18th and 22nd of April, a small peak on the 26th and the third peak between the second and fourth of May. The period of pollination extends from the second week of April until the second week of May.

The pecan and hickory groups pollinate about the first of May. By correlating the botanical survey we know that the white, black and bitter nut hickory pollinate for a very short period during the first week of May. Therefore, the peaks after that time is due primarily to the pecan species of hickory. There was a marked peak even as late as the 26th of May and pecan pollen was observed until the second day of June.

We believe that the peaks of the grasses were due almost entirely to the Bermuda grass. There are numerous peaks appearing throughout May, June, July, August and September. However, the greatest pollen concentration was during the last half of the second week, the third week and the fourth week of May but relatively high concentration appeared throughout June and July. The curve representing the chenopod, and amaranth groups showed numerous peaks throughout June, July, August and September. The most pollen observed of any species is that of the rag-weed. The rag-weed pollen was seen first about the 17th of August with the maximum concentration on the 13th, 14th, 19th and 20th of September.

Chart number 9 represents comparative study of the pollen peaks observed in Wichita, Oklahoma City, Henryetta and Muskogee.

O. C. Durham in Chicago, forwarded to me results of the study made on the slides exposed in Wichita and Oklahoma City. I think that it is of interest to note that the pollen concentration in Henryetta and Muskogee was greater than in either Oklahoma City or Wichita. The first high peak in these four cities was observed in Muskogee between August 29th and September 1st. The second peak in Muskogee coincides with the first peak in Henryetta. It is also interesting to note that the last large peak observed in Henryetta and Oklahoma City coincides with the peaks of lesser height in Wichita and Muskogee. The slides exposed in Wichita and Oklahoma City demonstrated the continuation of pollination through the first two weeks in October.

COMMENT

This study emphasizes the need of further detailed pollen and botanical studies in order to correlate pollen as the causes of seasonal hay-fever and asthma. We hope that this information will aid in acquainting those who have little or no knowledge of the principal wind-pollinated

plants in the respective territories. We propose this year to make a more detailed botanical and pollen study of the sorrels, docks, plantains and unusual grasses in Tulsa county.

I want to express my gratitude to Dr. Glismann of Okmulgee, to Dr. Campbell of Muskogee and Dr. Bollinger of Henryetta for their aid in this study.

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ALLERGY AS IT APPEARS IN THE UNITED STATES ARMY

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Allergy as it appears in the United States Army presents a somewhat different picture than it does in the average allergy clinic in private life. There are two principal reasons for this difference.

The regulations governing the admission of both officers and enlisted men into the service are very strict with regard to the two main allergic manifestations—asthma and hay-fever. No cadet is admitted to West Point, no officer nor enlisted man is admitted directly into the service with a history of either asthma or hay-fever. This regulation affects the clientele of an army allergic clinic. The large majority of patients are the wives and children of officers and enlisted men, with an occasional other dependent such as a father, mother, etc. A few officers and enlisted men develop some allergic condition after they have been accepted into the service, but well over 75 percent of our cases are women and children.

The other reason for the different picture is the more or less frequent changes in station of army personnel—both as regards the allergist and the allergic sufferer. The allergist has an opportunity to observe and study allergic conditions as met with in all parts of the United States as well as in frigid Alaska and the tropical and semi-tropical island possessions. The allergic sufferer has an opportunity to escape offending contacts by a change of station as well as to pick up new offending contacts upon arrival at his new station. The picture is constantly changing and relieves somewhat the monotony of a cut and dried series of cases such as often develop in an allergic clinic.

Before attempting to describe briefly the methods of diagnosis and treatment as carried out at our allergy clinic at the Station Hospital, Fort Sam Houston, Texas, I desire to go into some of the fundamentals of allergy for the benefit of those who have not made an intensive study of this phenomenon.

The term "allergy" was first used by von Pirquet. Literally, the term means "altered reactivity." However, in recent years the term has come into more or less

general use by the medical profession as a synonym of hypersensitiveness, even though hypersensitiveness does not actually signify an altered reactivity. Because of this accepted but etymologically incorrect use of this word, we speak of an allergy as a hypersensitiveness and of an allergic condition as a condition of hypersensitiveness.

Hypersensitiveness in the human being manifests itself in a number of ways. Some are relatively common and others relatively rare. The most common manifestations of hypersensitiveness are bronchial asthma and the so-called hay-fevers. The less common are urticaria, angioneurotic edema and the various other nerve, gastrointestinal and skin manifestations.

Hypersensitiveness, in an immunologic sense, is specific. Its mechanism is as follows: It consists of two substances that react with each other specifically. The two subsances are:

1. The excitant or active agent, such as pollen, proteins, foods, danders, etc.
2. The other substance, which is present in the tissues of the body.

In the mechanism, the active substance usually has no direct effect on the tissues. Only when the second substance is present does the first substance produce its injurious effect. Example: pollens are innocuous to the large percentage of persons. The active substance of poison ivy does not produce any symptoms in persons under three years of age, and only 60 percent of persons are affected at all by this substance.

The best-understood form of hypersensitiveness is anaphylaxis. In the mechanism of anaphylaxis, we have:

1. The antigen, usually a protein.
2. The antibody—the precipitin.

It takes about six hours to make a guinea pig passively sensitive to an antigen. This latent period means that the antibodies have to be taken up by the tissues and become incorporated with them before the reaction of the antigen, which is later injected, is injurious and then they cannot be washed out. In guinea pig experiments, 98 percent of the blood was replaced with non-antigen blood, but the antibodies still remained in the tissues. Muscular tissue is the only tissue irritated in anaphylaxis. In the guinea pig, the bronchial muscles are irritated to tetanic contractions in anaphylaxis. This causes an interruption of respiration, and the guinea pig dies of asphyxiation. A maximal distention of the lungs is always found after the death of the guinea pig from anaphylaxis. This is not the case with rabbits and dogs. In rabbits the pulmonary arterioles are physiologically completely obstructed. In this case it is the medial muscles of the arterioles that contract. In the dog, there is no effect on the bronchial muscles nor the median muscles of the arterioles. The anaphylactic reaction occurs in the liver. It becomes acutely congested, due to a strictly local reaction on the liver tissue.

Anaphylactic pathology differs widely in the different animals. The characteristic pathology of hypersensitiveness in the human being is edema, the cause of which is unknown. Urticaria is an edema; in hay-fever, there is an edema of the mucous membranes; in asthma, there is an edema of the bronchial tree.

Not every normal human skin is susceptible to the skin reactions for the hay-fever and asthma (atopic group) tests. Only about 85 percent are receptive; in other words, 15 percent of skins will not show positive reactions to the tests, even though they may be sensitive to the active principles of the extract.

There is a period (about 2 hours) after a skin test that the same skin area will not be sensitive to the same extract; but it will be sensitive to any other extract to the active principle of which the patient is sensitive. This shows that the skin test is specific.

Regarding the etiology of allergic conditions, we believe in three main classes:

1. Inhalation group.
2. Ingestion group.
3. Absorption group.

Inhalation Group: This group includes all substances which may be taken into the body by the air route. The most common offenders of this class are such things as danders, pollens, sachets, etc.

Ingestion Group: This group includes all substances which may be taken into the body by the alimentary route. The most common offenders are certain foods and drugs.

Absorption Group: This group includes

absorption from all foci such as nose and throat, intestinal tract, lungs, prostate, tubes and ovaries, etc.

There are certain predisposing factors that enter largely into the etiology of most allergic conditions. Most any underlying disease which reduces the 100 per cent efficiency of the human entity can be considered as a predisposing factor in allergic conditions the same as it can for infectious and most other diseases. Some of these diseases are: acute and chronic bronchitis, emphysema, tuberculosis, cardiorenal diseases, thymic enlargement, reflex bronchospasm, etc.

We have found in our clinic that a large majority of our asthmatics have an underlying focus of infection which in many cases is the only cause for the asthmatic condition. This is particularly true with children. Time after time we have had children brought to us in the throes of severe asthmatic attacks which have cleared up immediately upon the removal of bad tonsils, adenoids, or the clearing up of infected antra. Other asthmatics will present some predisposing factor as enumerated above coupled with a sensitivity to pollen, animal emanations, etc., or to some food product, or to both. In fact, we find that no two cases of asthma are ever exactly alike and that each case presents an interesting puzzle all its own.

With regard to our hay-fever cases, we find that the vast majority of them are caused primarily by pollen sensitivity. Some of them will have a focus of infection in addition to their pollen sensitivity. Others, the perennial types, will show a sensitivity to such things as danders, orris root, etc., either with or without a pollen sensitivity. We find that food sensitivities play little part in hay-fevers.

With our cases of urticaria, angioneurotic edema, gastrointestinal, and vague skin manifestations, the foods play the most important role. In this connection, we desire to go on record as stating that our experience with skin tests for foods has been decidedly disappointing. Still, when one stops to consider the method of preparation of food tests and the method of their application, it is not difficult to understand why the results are generally unsatisfactory. Most food extracts are prepared from raw foods. They are applied directly to the skin areas either by the scratch or intradermal methods which will be described later. It is beyond the possibilities of the most imaginative or bizarre mind to imagine that these foods reach the blood stream in anywhere near the same chemical composition as they do when absorbed from the intestinal tract. Many reasons will account for the differences in chemical composition. Some of them are as follows:

A great many of our foods are cooked This undoubtedly changes its chemistry, particularly if cooked with some other food. Practically none of our foods are eaten solely by themselves, but usually in combination with other foods. From the minute the food enters the mouth, its chemistry begins to change from the action of the various ferments, acid gastric juice, alkaline intestinal juice, bacterial action, etc. By the time food is absorbed, its chemical composition can therefore be seen to be quite different from its chemical composition as it is possible to use it in skin testing. For these reasons, we have practically abandoned skin testing for foods and rely almost exclusively on an elimination diet for our information relative to food sensitivities. The elimination diet procedure takes time and is trying on both patient and doctor. The results, however, are satisfactory and often elicit important facts on the case which cannot be obtained in any other manner.

Regarding the diagnosis of allergic conditions, one of the most important parts in the diagnosis is the case history. It is often possible, in taking a case history, to eliminate the great majority of possible causes and therefore cut down the great number of skin tests that are sometimes necessary if a careful history has not been taken.

Family history, with reference to atopic conditions in the immediate family, is imperative; the occupation and environment, both at home and place of business; dust, mattresses, pillows, stuffed furniture, talcum powder, etc., all bear an important part in the history of the allergic condition. The place of abode should be checked up carefully from the time the first symptoms of the disease started, with reference to the severity of the disease in each locality in which the patient has lived. The severity of the patient's condition in the different seasons is important.

A careful survey of the home environment in the case of children of parents whose intelligence is not up to normal should be carefully gone into. Ofttimes

such parents will answer questions simply with the idea of making a reply rather than giving accurate information.

In the history of hay-fever the season in which the symptoms appear is of great importance. As a general rule, throughout the United States, the pollen hay-fevers begin with the pollination of trees, which are usually the first to bloom in the spring. Fortunately, the number of tree cases is relatively small. This is probably due to the fact that the pollination period of the trees is comparatively short and that what is called the tolerance line is not often reached by sensitive persons before pollination of the specific tree is finished. Following the trees come the grasses. These are usually the cause of what we call early or June hay-fever. After the grasses come the flowers and weeds. The principal weed with which we are interested in this study of pollinosis is the rag weed. In this section, the carelessweed is also an important offender. Then in December comes the mountain cedar, which is also an important offender in our vicinity. The seasons of the various trees, grasses and flowers, vary of course, in different parts of the country. In this particular locality the grass is an offender for practically the entire year. The ragweed season in this vicinity is long, due to the fact that killing frosts arrive much later than they do in colder climates.

The diagnosis of allergic conditions consists, therefore, in the taking of a very careful history. A physical examination of the chest should be made, particularly in asthmatics. A complete nose and throat examination, including transillumination and X-ray of the sinuses, should be done. A dental survey, with the necessary X-rays, should be made to determine possible foci of infection in the mouth. A gastrointestinal X-ray is of great importance when there is any history of gastrointestinal trouble. A stool examination, particularly for hemolytic streptococci, is in order when the intestinal history indicates gas formation. A blood Wassermann test will often lead us in the right direction.

Two methods of applying the skin test in allergic conditions are in use:

1. The cutaneous or scratch method, of Schloss.
2. The intradermal or injection method, of Cooke.

Two forms of test proteins are in use:

1. The dry, powdered preparations, made according to the methods described by Wodehouse.
2. The fluid preparations originally used by Cooke, and now made according to the methods described by Coca and others.

Aaron Brown, in a summary of conclusions, compares the two methods, as follows, and claims that the superiority of the intradermal method over the scratch method has been shown upon the following grounds:

1. In every case known to be clinically sensitive to a protein, the intradermal test with that protein resulted positively. The scratch test with the corresponding dry preparations resulted positively in only half the cases tested. The scratch test with the fluid preparations resulted negatively in 18 percent of the cases tested.

2. The intradermal method, properly applied, is not so painful as the scratch method and the resulting markings of the skin do not persist so long after the former method.

3. Less time is required for applying the intradermal method and for obtaining the results than is needed for the scratch method.

4. The same preparation can be used for testing and for treatment when the fluid preparations are employed.

In doing the skin test, Vander Veer and Cooke have given the following significance to the cutaneous reaction:

The local reaction divides itself into three groups: (1) the immediate reaction; (2) delayed reaction; (3) negative.

The immediate reactions are marked, moderate or slight. Marked reactions are characterized by the appearance of an urticarial wheal with pseudopod projections and a surrounding zone of hyperemia, appearing in ten to fifteen minutes. Moderate reactions lack the pseudopod projections and do not form so large a wheal, but have a hyperemic zone. The slight reactions show a hyperemic zone, with little or no wheal. Slight and moderate reactions are at times obtained to extracts in a very weak solution and become marked where more concentrated solu-

tions are tried. Where reactions are slight or moderate to the concentrated extracts they are dismissed as of no clinical significance, unless they go on to develop delayed reactions and fall, then, into a different group, to be discussed later.

Marked reactions are of the greatest importance, but they, too, are occasionally false. At times one gets what we call the "splash" reaction, when the point of the needle happens to lie between two easily separated layers of the derma or epiderma, and the extract seems to splash out at once into an area with irregular edges. In such cases the wheal looks like a marked positive reaction, but it lacks the hyperemic zone. This also happens when an air bubble is introduced by mistake. Then occasionally, but not so frequently, a definite marked positive reaction is obtained, which can never be verified. These, too, must be set aside as of no clinical significance, for they could only indicate a short fleeting phase of allergy, a clinical condition of which we are not as yet cognizant.

Marked positive reactions, occurring on repated testings, always indicate a true hypersensitiveness. This statement requires a reservation, or more truly an explanation, in order not to be misleading. Cutaneous hypersensitiveness does not necessarily indicate clinical hypersensitiveness, because, in the ordinary course of life, the allergen can never be brought in contact with the hypersensitive cells. Let me cite briefly two actual cases to illustrate the point:

The first is the case of a man 45 years old who had been troubled for five years with a very extreme degree of vasomotor rhinitis, socalled. He gave marked cutaneous, ophthalmic and nasal reactions to corn and cottonseed meal. On the strength of this reaction one might have been tempted to withdraw corn and cornmeal from his diet. But it so happened that, five years before, this man had retired to a little farm and took great pride in his chickens which he himself fed religiously, twice a day, with corn and cottonseed meal. As soon as he stopped this his vasomotor rhinitis stopped. He was able to eat corn and cornmeal, which he did freely, as a test, without the slightest trouble. An injection of extract of corn produced a constitutional reaction with coryza and cutaneous hyperemia and urticaria. This case also illustrates the dangers in the interpretation of positive reactions when applied to foods.

The other case is that of a woman 30 years of age who had never had hay-fever of the Spring type, and would have recognized it before, because she had had autumnal hay-fever for about fifteen years. The test with a timothy pollen extract in March was markedly positive. The following June she had perfectly typical, clinical hay-fever of the early type.

We now have records of several such cases, giving marked positive cutaneous reactions with negative ophthalmic reactions. Such cases we consider as potential hay-fever cases. They have no clinical symptoms because the mucous membranes have not become hypersensitive. But we have had the satisfaction of watching such cases develop clinical hay-fever at a later date, at which time the mucous membranes react positively. Aside from the inheritance factor, such an experience tends to make one feel that the constitutional reaction is developed within the body by some means, other than ordinary immunologic procedure adopted in animal anaphylaxis.

Delayed cutaneous reactions occur from 6 to 24 hours after the test, and are characterized by an area of edema and redness, usually with itching, sometimes only an inch or two in diameter, and at others extending to the elbow or even wrist, when injection is made in the upper third of the arm. Of the clinical significance of such reactions nothing definite can be said at the present time. They are usually obtained with the food extracts rather than with pollen extracts, and may occur in apparently normal individuals or in those with clinical asthma, urticaria or angioneurotic edema; but so far as we can determine, foods giving such reactions may be eaten with impunity. We have never yet been able to make and prove a diagnosis on the basis of a delayed reaction, no matter how severe.

Negative Reactions: At the site of the test there is no enlargement of the papule caused by the injection of the 1-50 to 1-100 cc. of the extract tested. There is no hyperemia or other evidence of cellular or vascular activity, either immediate or delayed. In general, such tests indicate absence of hypersensitiveness, at least in the skin. But in exceptional cases negative reactions occur when the clinical history is absolute and definite. We have seen a number of cases with a history of acute and severe abdominal pain, vomiting and diarrhoea, occurring about twen-

ty minutes after the ingestion of clam. It has occurred not once but several times. The cutaneous reaction is always negative. Such cases can readily be explained on the basis of a localization of the hypersensitive area to the gastric or upper intestinal tract. We have observed this localization of hypersensitiveness to the nasal mucous membrane in a very few cases of vasomotor rhinitis, and not infrequently in hay-fever the degree of hypersensitiveness is much greater in one eye than in the other.

Just as we see local reactions of the immediate and delayed type, so also do we see immediate and delayed clinical reactions. By delayed clinical reactions I mean a reaction occurring 24 hours to five days after the ingestion of a substance. Immediate local reactions, when they signify anything at all, indicate an immediate clinical reaction; but delayed local reactions are not indicative of delayed clinical reactions; in fact, they have no known significance.

Time has not permitted me to go extensively into details, nor to give statistics on the relative frequency of the exceptions to the rule. Suffice it to say that the application of the test to the diagnosis of a clinical condition must be made with the greatest care, and we make it a rule for the absolute diagnosis of a specific etiologic factor to conform to the following commonsense requirements, which we have dignified by the term postulates:

1. Hypersensitiveness must be proven either by:

a. A local reaction of a marked type that can be verified at will, or by

b. A constitutional reaction that duplicates the clinical condition under study when the allergen is introduced by ingestion, inhalation, or by intradermal, subcutaneous, or intravenous injection.

2. It must be proven that the individual comes in contact with the reacting substance in such a way that it can be responsible for the clinical condition.

It is urgently recommended that fresh adrenalin (epinephrin) solution (1:1000), be always on the work table when tests are being made, in case it is needed to combat a constitutional reaction.

The treatment of any allergic condition depends, of course, upon its cause. All foci of infection must be cleared up. Oftimes cases with severe asthmatic symptoms are absolutely cured by the proper attention to the nose and throat. Recently we have had three cases whose severe asthmatic symptoms were completely relieved by an autogenous hemolytic streptococcus vaccine when this organism was demonstrated in the stool. It was rather striking that all three of these cases showed a great deal of intestinal gas formation. Whenever the gas developed, asthma started. When there was no intestinal gas there was no asthma.

Cases showing positive blood Wassermann tests should receive specific treatment. One case of asthma which was gone over very thoroughly in our clinic showed no other cause for his allergic condition. After receiving specific treatment his asthma automatically ceased.

All the allergies in which the cause can be demonstrated by the skin tests can be treated by injections of the extracts to which the patients are sensitive.

When a case is found sensitive to certain substances which can readily be removed, either from the diet or environment, it is much easier to follow this procedure than to attempt desensitization. The results, too, are more immediate. For example, if a case is sensitive to feathers, the answer is—remove the feathers. If a case is sensitive to some of the unusual foods, such as shell-fish, strawberries, mustard or pineapple, it is a simple matter to prohibit such foods. On the other hand, if a case is sensitive to such common articles of diet as milk, egg-white, or wheat, it may be necessary and desirable to desensitize. It is a hard matter for a person to take an ordinary meal without eating some of these common articles. Then too, the patient's occupation should be considered. For example, a person with a considerable sum of money invested in a poultry farm could not be told offhand to quit this business because he was feather-sensitive. An earnest effort at desensitization should first be made.

It is desired at this point to call attention to a systematic and uniform method of making the skin test. This system has been adopted and is in use at the asthma and hay-fever clinic of the New York Hospital. It obviates all possibility of error in knowing where each extract is placed. As a general rule the arm is the site chosen for the skin tests. In case of society women, who spend a large part of their time in evening clothes, there is of-

ten a great objection to the temporary disfigurement of the arm. In these cases the inner-antero aspect of the thigh can be used. After the technician decides upon what his routine tests will consist of it is wise to inject these tests in the same order on each patient.

The routine tests at our clinic consist of eighteen inhalent extracts and eighteen food extracts. No matter which arm or which thigh is used, No. 1 extract is injected on the upper, left-hand corner of a presumed rectangle. No. 2 is placed one inch below, No. 1, 3, 4, 5, and 6 follow each other consecutively in a straight line from above downward. That gives us our first six extracts in a straight row. No. 7 is placed one inch to the right of No. 1, and 8, 9, 10, 11 and 12 follow down in a straight line under No. 7. No. 13 is placed one inch to the right of No. 7, and follows the same routine. When completed, there are three rows of six tests each. It makes no difference whether the right or left arm or thigh is used if this routine is followed, working from above downward and from left to right, there is no possibility of confusing the identification of your extracts. Another point is that, in a large clinic, where a number of testers are working at the same time, a mere glance at a reaction indicates to any and all of the testers what extract is giving the reaction, provided they know which group is being used.

For those who are not skin-sensitive, it is necessary to use the straight pollen, either as an ophthalmic test or directly into the nose.

Desensitization of pollen cases is accomplished in one of two ways. The prophylactic or pre-seasonal desensitization is better. This consists of first determining the kind and degree of sensitiveness. After this is determined, the treatment consists of subcutaneous injections of the proper strength extract twice a week, beginning six weeks or two months before the offending plant is due to blossom. The prophylatic or seasonal treatment is given when the patient is not seen soon enough to give the pre-seasonal treatment. It is best done by a subcutaneous injection of the proper strength extract daily until the patient has become properly desensitized. An effort may be made to place the patient in a pollen-free room until desensitized, if the symptoms warrant.

In treating the symptoms of any allergic condition as they arise there are two drugs which are specially valuable. Most acute attacks of hay-fever and asthma can be relieved by epinephrin solution (1:1000) hypodermically, in doses of from 0.3 to 0.5 cc., repeated in fifteen minutes if necessary. Another drug which is relatively new, with very much the same physiologic action as epinephrin, is ephedrine sulphate or hydrochloride. The advantage of this drug over epinephrin is that it can be given by mouth, in capsule form, and that it usually does not cause heart pounding, which often follows the injection of epinephrin.

There are numerous other drugs which have been used since time immemorial. Potassium iodide, calcium salts, etc., may be tried, but usually without much benefit. X-rays and other forms of physiotherapy have been quite beneficial in some forms of bronchial asthma.

It is possible to purchase on the market, testing extracts for hundreds of different substances. Time was when a person was scratched from stem to stern with hundreds of these testing extracts. Experience has shown, however, that very few substances are in the list of usual offenders. Unless some of the unusual extracts are indicated from the case history, the routine tests have been reduced to comparatively few. Our clinic uses two groups of testing extracts.

The first group is called the inhalent group, and consists of eighteen extracts as follows:

Timothy	Horse Ser.	Duck Ep.
Ragweed	Cat Ep.	Goose Ep.
Carelessweed	Dog Ep.	Tobacco
Orris	Rabbit Ep.	Pyrethrum
Dust	Goat Ep.	Cottonseed
Horse Ep.	Chicken Ep.	Sheep's Wool

The second group is called the food group, and consists of eighteen extracts as follows:

Wheat	Milk	Chocolate
Corn	Egg	Peanut
Rice	Chicken	Almond
Rye	Beef	Coconut
Oats	Lamb	Mustard
Buckweat	Pork	Black Pepper

These extracts have been chosen because they have been found, through years of study, to be the most usual causative agents for allergic conditions. If the history points toward some unusual substance, the patient is tested with this extract.

In the making of extracts, the question

of the proper standardization is imperative. The principal objection to most of the commerccial extracts on the market today is that they are not scientifically standardized. The Department of Applied Immunology in the New York Hospital and Cornell University Medical College have unquestionably proven that the nitrogen standardization is the proper one. They have shown that the substance in a pollen (atopen) which causes allergic symptoms runs hand in hand with the nitrogen content of the pollen. If the nitrogen content is low the amount of irritating substances is low, and vice versa. Knowing that the nitrogen content of the same pollens from different localities *may* vary, it has been shown that the best way of determining and specifying extracts is upon a nitrogen basis. In using the nitrogen basis we can be sure of our extract strengths, no matter where the pollen is obtained. The nitrogen determination is done by the well known Kjeldahl method.

It is not necessary here to go into the details of extract making. Suffice it to say that most of the extracts are made by using a saline solution as the extracting medium. The actual technic is exacting and time-consuming and should be done only by those who know how and who have the proper laboratory equipment. Some commercial extracts contain glycerine as a preservative. The presence of glycerine precludes an ophthalmic test, because the glycerine itself will produce enough conjunctival irritation to be readily mistaken for a positive allergic reaction.

The check-up on pollens which are present in the air in a given locality is done by exposing glycerine plates daily or as deemed necessary. The plate contents are then examined under a microscope to determine the pollens flying at that particular time. In general terms it can be stated that the pollens of plants whose flowers have color, odor, or both, are not windborne. Exposure to such pollens, therefore, is only by close contact with the flowers.

In regard to the two principal windborne offenders—the grasses and the ragweeds—Vander Veer and Cooke have proven quite conclusively that timothy will take care of all the various grasses and that the different ragweeds can be handled by an extract of any one of them. Timothy contains all the atopens that any of the other grasses contain and can be used to test and treat all grass cases; and there are a large number of grasses. Over 100 different grasses have already been identified and classified in the vicinity of San Antonio.

In conclusion, it is desired to state briefly the numerical basis upon which we base our report. This is done merely to show that our observations have not been based on a mere handful of cases:

PATIENT DAYS BY YEARS

*1927	1928	1929	1930	1931
472	2148	2253	1844	2226

(*Clinic opened August 15, 1927).

Fort Sam Houston, Texas.

IMMEDIATE CECOSTOMY AND CONSTANT LAVAGE IN MERCURIC CHLORIDE POISONING

In an analysis of 163 cases of mercury poisoning at the Mount Sinai Hospital of Cleveland, S. S. Berger, H. S. Applebaum and A. M. Young, Cleveland (Journal A. M. A., Feb. 27, 1932), noted a number in which the patients survived the usual gastric and renal damage but succumbed to a gangrenous colitis. This lesion was apparently successfully prevented in three cases by constant colonic lavage following cecostomy done within a few hours after the ingestion of the poison. The authors believe that immediate cecostomy and constant colonic lavage is the most effective measure for the prevention and treatment of the gangrenous colitis. By immediate cecostomy is meant its performance as soon as the patient is admitted, provided he is not in extreme shock. The diagnosis of mercury poisoning is first established by the detection of mercury in the gastric lavage by the electrolytic method of Booth and Schreiber, which can be done in a few minutes.

HOW TO CORRECT DIARRHEA

After a starvation period of twelve to twenty-four hours on boiled water or gelatin water (1-3 ounce of gelatin to one pint of boiled water), the infant should be given Protein S.M.A. (Acidulated) diluted four level tablespoons with nine ounces of water, and without any additional carbohydrate.

	1st Day	2nd Day	3rd Day(*)
Severe cases	3 oz.	6 oz.	9 oz.
Medium cases	10 oz.	15 oz.	20 oz.
Mild cases	15 oz.	30 oz.	

(*) Until the proper amount for their age and condition is reached, which is 200 c.c. per kilo of body weight per twenty-four hours, or three ounces per pound of body weight per twenty-four hours. However, the total twenty-four hour intake need not go above thirty-two to thirty-five ounces or 960 to 1050 c.c.

After 48 hours or when the stools become normal, ALERDEX (Hypo-Allergic Maltose and Dextrins) should be added gradually, beginning with one ounce to the quart, and increasing until the infant is gaining steadily in weight. In certain cases, it may be necessary to increase the carbohydrate to a total of 12 to 15% (3 to 4 ounces of carbohydrate to the quart).

TREATMENT OF HEMOPHILIA WITH THEELIN

CHAS. ED WHITE, M.D.
MUSKOGEE

Hemophilia is a constitutional anomaly. It is characterized by being dominant in the male and recessive in the female. Hemophilia is further characterized by a marked prolongation of the coagulation time. There is a definite hereditary link and the hidden tendency of the mother is transmitted to the son who manifests a life long tendency to hemorrhage from the most minor injury.

Howell[1] advances the theory that the anomaly is due to the blood platelets which may be normal in number and morphology, but fail to yield the cephalin necessary for a normal clotting process.

Birch[2] has confirmed the platelet theory of Howell's and has further shown that in the male the hemophilia is due to the lack of the ovarian hormone, which is now known as Theelin. She showed that the urine from normal males contained enough ovarian hormone when concentrated to produce estrus when injected into rats. Estrus did not occur when the urine of hemophiliacs was used.

Foord and Dysart[3] report the successful use of ovarian extract in a clinical case of hemophilia following tonsillectomy.

Recently I have had occasion to use Theelin in two cases (brothers) who were definitely hemophiliacs, and advised its use in a third male. The results were excellent in each case, as shown by the following report:

Case No. 1. Baby, K. L. N., age 6 months, referred by Dr. Graves, Boynton, Oklahoma, was admitted to the Oklahoma Baptist Hospital, Muskogee, Oklahoma, December 15, 1931. A well developed breast fed baby with its first illness. The baby had been having fever about a week before admittance. When admitted his temperature was 102, pulse 140, respiration 33. He continuously rotated his head from one side to the other. There were slight convulsive movements of the upper and lower extremities. The right ear drum was inflamed but with no bulging. The throat was mildly inflamed. There was an occasional mild paroxysm of coughing and many mucous rales over the base of the right lung. There were no other abnormal findings. The temperature continued to rise during the night and at 8:00 A. M., on the 16th, a paracentesis of the right ear drum was done by Dr. M. K. Thompson. Just before the ear drum was incised the mother told us that the baby was a "bleeder," and she had lost three boys from hemorrhage; one 10 years old, who bled for 17 days before death from a small cut on the foot; one 14 months old, who bled for 34 days from a slight injury to his gums; one 4 months old died of hemorrhage of the lungs. The first two boys died in the hospital. She has 3 girls living who are not bleeders. There has never been any other bleeder in her family as far back as she is able to acertain. On account of marked bulging of the ear drum and the irritability of the baby, it was decided to make a slight opening in the drum. Then our trouble started. There was a rapid drip of blood from the ear from then until 5:30 P. M. The ear was packed with stypticine, thromboplastin, adrenalin and tannic acid, at different times. The patient was also given 25 c.c. of whole blood intramuscularly from the father but the hemorrhage continued. These agents apparently had no influence on the coagulation. In a conversation with Dr. Hugh F. Dwyer, Kansas City, Missouri, by telephone, the use of Theelin was advised. One-half c.c. was given intramuscularly at 5:00 P. M., and at 5.30 P. M., the bleeding began to slow down and had completely stopped by 6:00 P. M. When the pack was removed a slight oozing occurred which persisted only for a few minutes. Two days later another ½ c.c. of Theelin was given intramuscularly. The baby developed a bronchopneumonia but had an uneventful recovery. The mother insisted on taking the baby home the 10th day. Since going home it has received 1-3 ampoule Theelin every four days. The mother says the baby has had several scratches but has never bled any more than a normal child. Similar wounds in her other boys would have bled for 3-4 days. This baby was returned to the hospital June 21, 1932. Laboratory report showed: Erythrocytes 4,250,000, Leucocytes 24,500; Haemoglobin 78% Sahli. Total Neutrophiles 77% (Staph. 12%; Segmented 65%); Lymphocytes 20%; Monocytes 3%. Coagulation time 9 minutes (capillary pipette method). Platelets 200,750 per c. mm. The red cells showed only a slight anisocytosis. Baby was admitted to hospital for diarrhea and two days later developed measles. His recovery was uneventful.

Case No. 2 (Brother of Case No. 1) was presented for examination and the following history obtained. His mother said he was subject to what she believed was rheumatism, and bled "under the skin" from the slightest injuries and these masses remained for weeks. Abrasions of the skin would ooze for 3-4 days and some had bled as long as a week. Physical examination showed an anemic, undernourished, 10 year old boy who walked with a decided limp. There was a large hematoma of the left knee. Otherwise, the examination was essentially negative. No labortaory examination was made as the mother would not give her consent. The patient was returned to Dr. Graves with the suggesion that he be given 2-3 ampoule of Theelin every four days and that he return within two weeks for further observation. However the patient did not return until June 1st at which time the mother stated there had been marked improvement. She said the patient had received many scratches and bruises with no greater hemorrhage than would be expected of his sister. When seen the second time the patient had not received any Theelin for more than three weeks because the family had been on their vacation. Laboratory work was permitted by the mother and the report showed: June 1, 1932; Erythrocytes 4,450,000; Leucocytes 14,700; Haemoglobin 100% Sahli. Total Neutrophiles 73% (Staff, 3%; Segmented,

70%); Lymphocytes 22%; Monocytes 5%. Platelet count 413,800 per c.mm. Coagulation—3 minutes and 30 seconds (capillary pipette method). No changes in the red cells. Clotting time (Lee and White's method) blood obtained at 2:00 P. M., and 5 hours later blood had not clotted. At 8:00 A. M., June 2nd, a feeble clot had formed which did not hold all the red cells. Wassermann negative. Von Pirquet negative. Bleeding time (Duke's method) one minute and 30 seconds. X-ray findings made June 1, 1932: Lateral view of patient's left knee revealed a roughing of the contour of the lateral condyle of the femur, and some leveling of the joint surface of the tibial epiphysis. These changes are not noticeable in the patient's right knee. The left knee also demonstrates a considerable evidence of soft tissue swelling. The swelling is probably extra capsular in as much as the patella is not elevated. We see no evidence of sub-periosteal hemorrhage. There is no involvement of the epiphyseal line. The swelling may be the result of the peri-capsular hematoma. June 3rd the patient was given one whole ampoule of Theelin and the following day, June 4th, the clotting time was three hours (Lee and White method). This showed a marked decrease of clotting time after Theelin was given. The patient is now receiving one whole ampoule of Theelin every 4 days. He has improved continuously in every respect since Theelin was first begun.

Case No. 3. Male, age 3 years, admitted to Muskogee General Hospital[4] February 28th. Two days previous to admittance the patient fell and injured his jaw and shoulder. His mother stated that he had been bleeding from the gums and under the skin of the face and shoulder ever since. Family history was negative except as follows: Brother died at 8 years following a blow on the head and his death was believed to have been from a cerebral hemorrhage. He has one sister 5 years of age who has always been in good health. Examination of the patient showed a well developed male child with a marked hematoma of the whole right side of face, a large hematoma of shoulder and a brisk oozing from the gums of the left side. Other physical findings were negative. Several coagulents were used locally, calcium was given internally and other usual procedures carried out to stop the hemorrhage. The patient continued bleeding for two days. One ampoule of Theelin was given and the bleeding stopped at the end of six hours.

SUMMARY

A report of three cases of clinical hemophilia in which Theelin (P. D. & Co.,) was used to control hemorrhage. No definite dosage was known or used. There was no reaction in any case from its usage. Bleeding stopped promptly and has not recurred in these cases. Theelin hastens clotting time as shown in case No. 2.

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ALLERGIC DISEASES — A HISTORICAL SKETCH

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It was Louis Pasteur who said "science has no country." How true this statement seems to be as we study the annals of medical history. Not unlike other lines of medical research we find that men from many countries have added their contributions to the study of the symptom complexes spoken of as allergic diseases. The first description of asthma is found in the book of Exodus. A reference is made concerning it in two passages of Homer, and Hippocrates mentioned it. But it was Aretaeus, who lived 300 A. D., at the time of Galen, who gave us our classical description of the asthmatic paroxysm, and may I repeat it:

> ". . . the evil is much worse in sleep; the voice is liquid without resonance, a desire of much and of cold air. . . . They breathe standing, as if desiring to draw in all the air which they can possibly inhale; and in their want of air they also open the mouth as if to enjoy the more of it; pale of countenance except the cheeks which are ruddy . ."

Aurelius Cornelius Celsus, who lived in the reign of Tiberius Caesar, preceded Aretaeus with writings on many scientific subjects, one being that of medicine. He divided the various diseases with shortness of breath into three classes, depending on the degree of difficult respiration, *namely*, dyspnea, asthma and orthopnea. Despite the fact that Aretaeus was the first to describe asthma, the classification of Celsus remained popular through the Middle Ages. During this period we find practically no writing concerning the syndrome.

The modern conception of bronchial asthma as a disease entity dates from the writings of Thomas Willis the latter part of the 17th century. However, before this time there is an interesting bit of clinical history of asthma that I must not fail to mention. In the year 1575 Jerome Cardan, a great clinician in Padua, was called to Edinburgh to see the Archbishop, who had been a severe sufferer of asthma for many months. After studying his condition carefully he advised the Archbishop to change certain articles of diet, and to eliminate from his bedroom the feather bed on which he was sleeping. The Archbishop's recovery seemed almost miraculous, and he was so pleased with the advice given him by Cardan that he doubled the

fee that had been agreed upon. No doubt Jerome Cardan had no conception of a theory of hypersensitivity to feathers, as we think of it today, but his broad clinical experience had taught him in some cases there was a definite relationship between feathers and asthma.

We find no other reference to the relationship between animal epithelium and asthma until 1835, at which time a description was given in the American Journal of the Medical Sciences, Vol. XVI, page 212, of a case of asthma excited by new feathers. In 1858 Henry Hyde Salter published his classical work describing cases of asthma and hay fever due to animal emanations. Being himself a sufferer of the disease he early in his career turned his attention to the disorder in the chest and began to collect material for work on his own malady. His description of "cat asthma" is of particular interest. Of this form of asthma he writes:

> "The cause of this asthma is the proximity of a common domestic cat; the symptoms are very similar to those of hay fever, and, as in the case of hay fever, are occasioned by some sudden influence inappreciable by the senses. I cannot recollect at what time I first became subject to cat asthma but I believe the liability has existed from the earliest period of life. I believe some asthma would present itself if I were sitting by the fire and the cat sleeping on the hearth rug; but the effect is much greater when the cat is at a distance of one or two feet or still closer; it is still further increased by the raising of the rug and moving and rubbing about, as is the habit of cats when they are pleased; also by stroking their fur, but most of all when they are in the lap just under the face."

Henry Hyde Salter's good wife and medical confreres laughed at him when he told them concerning his idea of the domestic cat as the cause of his trouble. However, before his death he showed that animal emanations from practically any animal are not uncommonly the sole, and often a contributing factor in asthma.

In 1819 John Bostock, an English physician and clinician, read a paper before the Royal Medical and Chirurgical Society of London on a "Case of Periodical Affection of the Eyes and Chest," in which he presented to the members of the society the clinical symptoms of a seasonal affection which had troubled him since childhood. A little later he described the affection as "catarrhus aestivus" or "summer catarrh." However, since the time of his first writing the symptom complex has been popularly spoken of as hay fever.

JOHN BOSTOCK

Born at Liverpool, England, 1773; died at London, 1846. Author of a number of the early papers dealing with the symptom complex "hay fever." The "father of clinical allergy."

In a monograph on hay fever Dr. Philip Phoebus described what is probably the earliest experiment carried out by a hay fever patient upon himself. This was done by Dr. W. P. Kirkman, a German physician. The latter tells us that a day or two before Christmas he noticed in his hothouse a single plant of *Anthoxanthum odoratum* (Sweet vernal grass) loaded well with pollen. This, he thought, offered a splendid opportunity for experimenting with this particular grass, so he plucked it, rubbed the pollen in his hand, and sniffed it up his nose. Almost immediately it brought on an attack of hay fever which lasted an hour.

Credit, however, must be given to Charles Harrison Blackley, of Manhattan, England, who in 1873 proved beyond question that pollen is the cause of seasonal hay fever. The writings of Blackley are remarkable when we view them in the light of our present knowledge of hay fever. Clinically he tested on himself the pollen of nearly 100 different species of grasses and flowers. No methods of testing for protein sensitivity are used today that he did not use at that time, but of course they have been greatly modified.

In America we find Morrill Wyman, of Cambridge Massachusetts, to offer the first noteworthy contribution on the subject of allergy. In 1854 he described the disease in his lectures at the Medical School of Harvard University, and

in 1866 wrote a paper on the late form of hay fever entitled "Autumnal catarrah," which he read before a meeting of the Massachusetts Medical Society. Wyman was probably the first to recognize the pollen of ragweed as a causative agent of autumnal hay fever. With some other members of his family he had been a lifelong sufferer of the autumnal form of the disease and upon himself and them he proved clinically that the pollen of ragweed was the specific factor in the cause of their hay fever symptoms.

The pollen theory of the etiology of hay fever offered by Blackley and Wyman was by no means generally accepted in the United States and abroad. It was offered during the so-called bacteriologic age. The research work of Pasteur and Koch had led many to believe that the symptoms were of infectious origin, although not one of Koch's postulates had been fulfilled in any experimental work they had done on the etiology of hay fever.

A quarter of a century later Dunbar, also a victim of hay fever, repeated many of the experiments of Blackley and Wyman, and wrote extensively concerning them, and established in the minds of many physicians the importance of the role played by pollen as a cause of hay fever. He laid the scientific foundation from which has evolved our modern methods of determining the specific factors and the treatment of hay fever and asthma.

In the early part of the 19th century some French investigators called the attention of the medical profession to the fact that there was probably a definite relationship existing between asthma, hay fever, eczema, urticaria and migraine, but during the remainder of that century little was written concerning the relationship.

This brings us down to the 20th century, and it is interesting to note that in allergic investigation the field of action changes from England, France and Germany to our own country. In 1906 William Scheppegrell established the synchronism of Fall hay fever and the pollinating season of the short and giant ragweed. Subsequently he proved the innocence of the goldenrod, the generally accepted cause of Fall hay fever. He deserves much credit for arousing the interest of both the laity and the medical profession in this country in the study of the cause and prevention of hay fever and asthma.

In 1910 Meltzer recognized that the insufflation of the lungs seen in guinea pigs which had died of anaphylactic shock was quite comparable to the pulmonary distention with emphysema seen in patients with bronchial asthma. In 1912 Schloss published the classical description of his patient sensitive to egg, almond and oatmeal. In 1914 Goodale recognized a case of horse asthma who was very sensitive to horse serum. He demonstrated that a drop of diphtheria antitoxin placed on the lobe of the ear or on the end of the middle turbinate caused an immediate local reaction, with swelling, pallor and local irritation. With the bits of knowledge given by Meltzer, Schloss and Goodale as a neucleus it remained for Koessler, Walker, Coca, Cooke, Vaughan, Piness, Rowe, Duke, Hurwitz and others in this country with their experimental work in immunology and extensive botanical surveys to throw sufficient light on the hay fever and asthma problem that henchforth, with few reservations, the diseases mentioned must be regarded as curable, or at least controllable, and their tortured victims are to be no longer neglected.

The names I have just mentioned are American physicians, all of whom, except one, are now living, who should, and evidently will be given due credit for their endeavors when the medical history of the present age is written.

During the last three years the greatest advancement in allergic work has been made in the discovery of newer methods of determining the etiologic factors in allergic syndromes other than hav fever and asthma, *namely*, migraine, urticaria, and certain forms of eczema and colitis. Much credit is due Vaughan for emphasizing the important role that food sensitization and a sensitization to other substances plays in the cause of eczema. He was first to show that migraine patients sensitive to food or foods could be partially or wholly relieved by specific avoidance, and that an attack of headache could be produced by the ingestion of the specific food. Rowe suggested that food allergy must be considered a possible cause in all cases of migraine. We have recently studied a series of 2732 individuals of various walks of life with an idea of determining the incidence of migraine in the United States. We also studied a large series of patients who were sufferers of migraine. From our study we concluded that approximately 4 per cent of all the people in this country are now migraine sufferers, and

that at least 25 per cent of these are children.

From our study it appears that migraine, that snag over which the medical profession has stumbled for centuries, is interchangeable in the linkage with other allergic diseases, and that a specific sensitization to food or foods is the primary etiologic factor in all cases of true migraine. We are led to believe that multiple localized areas of congestion of the cerebral cortex, comparable to hives on the skin, will most logically explain the multiple cortical symptoms complained of by migrainous patients. In our study we estimate that about 14 per cent of the population of the United States sometime in life suffer from one or more of the allergic syndromes.

The question, what factors play a part in determining who might become sensitive and have allergic symptoms is frequently asked, both by the laity and the medical profession. In answer to the question I should say that in the first place the ability to become sensitive is inherited and is transmitted according to the Mendelian law. So it appears to be a mark of distinction to be an allergic individual, inasmuch as one is in the selected few. In the second place, the degree of contact has much to do with determining the substances to which one becomes specifically sensitive.

A second question frequently arises, again in the minds of both the laity and the physician, as to whether the allergic patient does not fall in the class of the so-called neurotic. My answer is "emphatically, no." However, they are usually people of sensitive mentalities, mercurial dispositions, but they are dynamic characters, and unless their symptoms are very severe we find them coping with life's problems much better than the average individual.

With the newer methods of determining the etiologic factors and the more practical methods of treatment at hand today, much can be done for those who suffer from allergic diseases. What the future holds for us no one knows, but in all probability during the next decade added information will be given us that will greatly enhance the value of our present methods. From our study of the medical history of the past we realize that many of our present conceptions concerning allergy are wrong since both in experimental and clinical medicine it is so easy to misinterpret our findings. How true are the words of Sir William Osler, who said:

> "Even in populous districts, the practice of medicine is a lonely road which winds uphill all the way, and a man may easily go astray and never reach the Delectable Mountains, unless he early finds those shepherd guides of whom Bunyan tells, Knowledge, Experience, Watchful, and Sincere."

I must not let this evening go by without a word of thanks. I feel very grateful that I have been reared in this mid-western territory, educated both academically and medically by her universities, and I realize I owe her a debt which is still unpaid. I look forward into the puzzling uncertainties of the future with high hopes that I may add certain bits of knowledge concerning the allergic diseases that will help to pay this debt. A decade and a half ago medically I sat at the feet of our worthy president. I then, like many others, admired him, as we still do. He regards us with a certain parental affection, as we him with filial pride. Especially during his presidency I feel greatly honored in being asked to address you on this occasion.

BACILLURIS UNDER KETOGENIC TREATMENT

In October, Anson L. Clark, Rochester, Minn. (Journal A. M. A., May 14, 1932), reported the results in two cases of bacilluria of Escherichia coli type, in which the ketogenic diet was given. Since that time, he has applied the treatment in several additional cases of persistent bacilluria, and the patients have been under observation long enough to allow the results to be evaluated. Several notable features emerged from observation of these cases, namely: 1. The general condition of the patient must be such that he can endure the alteration in his diet. 2. Cooperation of the patient is absolutely necessary. 3. The patient must be able to digest and assimilate fats. 4. The normal intake of fluid should be maintained. Increase in the intake of fluids may cause undesirable dilution of ketogenic products. 5. If the infection is in the upper part of the urinary tract, treatment must be continued for a longer time than if the infection is in the bladder. 6. The ketogenic diet tends to entail constipation and gastro-intestinal upsets, but a dietitian can forestall these effects. 7. Escherichia coli responds to this type of treatment more readily than organisms of the genus Pseudomonas or than Aerobacter aerogenes. 8. When patients are given the ketogenic diet, the appearance of acetone bodies in the urine and increase in the acidity of the urine would be expected. Nevertheless, in some cases such bodies are not found and acidity is not increased. 9. The effect of the ketogenic regimen does not seem to be solely the result of reduction of the ph of the urine. There is apparently some bactericidal substance in the urine of patients who are under the ketogenic treatment, for growth of the bacilli may be inhibited even though the ph of the urine is more than 4.6 or 5.0.

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Local news of possible interest to the medical profession, notes on removals, changes in address, births, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmancy of the A. M. A., will not be accepted.

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EDITORIAL

THE TULSA TRIBUNE'S ATTITUDE ON ADVERTISING

A FLEXIBLE CODE

"The American Medical Association believes it "unethical" for its members to advertise. It is very strict against any physician giving the facts about his qualifications, the possibilities of medical or surgical treatment, or anything else concerning actual medical practice, to the public. It demands that the public be kept in the dark concerning the medical profession. This ruling apparently is for the benefit of members of the profession who would have little practice if they were forced to compete with abler physicians who advertised their ability. It is tough, however, on the victim of disease who stumbles blindly into the office of the wrong doctor, or who, not knowing that there is a cure for his peculiar ailment if he could go to the proper specialist, puts off a visit to a consulting physician, who would charge him a fee for sending him to the right man, until it is too late.

The Oklahoma State Medical Association, just winding up its fortieth annual convention in Tulsa, adheres to the socalled "code of ethics" which denies the public the information about doctors which the public sorely needs. It disapproves of the advertising physician. Yet, in the annual report submitted to the convention by the secretary, treasurer and journal editor of the association, it is disclosed that nearly one-half of the association's total revenues last year were derived from advertising. Under the heading "Journal and Advertising" in the financial statement is the report. 'We have received from our advertisers $6,022,85." The total receipts were $12,591.85.

It is ethical for a member of the Oklahoma State Medical Association to read in his trade paper the advertisements of medicines, surgical tools and other things offered for sale to physicians. But it is unethical for that same member to tell disease sufferers, through the advertising mediums which they read, of the treatment he has to offer. The physican buys from the advertiser who offers for sale the things exactly suited for his purpose, and he takes the word of the advertisement for it. The public is denied the right to compare, in advance of purchase, the wares offered for sale of various physicians. It is a queer code of ethics."—The Tulsa Tribune, May 27, 1932.

Now this would be a fine system for the medical profession to follow. In the first place, from past observance, we deny the fitness of the TRIBUNE to advise the medical profession as to any matter of ethics, for we have not the highest regard for the ethics of the TRIBUNE, as evidenced by their actions in the past. However, that has nothing to do with the matter of doctors advertising. Would it not be a fine thing to wake up some morning to find advertising from the one hundred some odd doctors residing in Tulsa emblazoned across the pages of the TRIB-

UNE calling attention to the wonderful qualifications and fitness of these various doctors to do various types of work. The poorest and most unfit doctor in Tulsa could submit copy, probably prepared by the copy writer of the TRIBUNE itself, pay for it, and it would go out to the public as something worth while, while as a matter of fact the man being advertised would be wholly unfit to carry out what he claimed to be able to carry out. Good doctors have, and always have had abhorrence toward advertising in any form. They are willing to help people in any and all manners where at all possible, but they do not see the propriety of advertising their fitness to do so.

It might be news to the TRIBUNE to know that when this is written the writer has before him a "Medical Journal" which has altogether twenty-one advertisements which are positively not acceptable to the Journal of the Oklahoma State Medical Association for the simple reason that the matter they advertise has been thoroughly investigated by highly qualified persons and found untruthful or lacking as to their claims. As stated above, we repeat we would not accept these advertisements for any amount of cash; primarily we do not operate the Journal for cash, the money received from advertising merely goes to betterments, not for the payments of dividends, like stockholders of the TRIBUNE receive, but is expended in the furtherance of medical progress of doctors of Oklahoma. We feel we are in better position to say whether or not we are to advertise than is the TRIBUNE. To any thoughtful person, the idea of doctors advertising, like dealers in salmon and sardines, cream of wheat and post toasties, is preposterous and out of the question.

We recommend at least three hospitals in Tulsa for the consideration of the writer of the TRIBUNE editorial, the Morningside, St. Johns and the Oklahoma Hospital and Sanitarium. We recommend the latter most highly because it is especially fitted to treat mental diseases.

ALLEGED MALPRACTICE CASES

As was to expected the great depression has increased materially the number of alleged malpractice cases brought against physicians. At times we feel a sense of irritation toward our brother physician, for many of these suits are brought about by the attempt of a thoughtless physician to collect a small, insignificant fee, from a person who is often unable, as well as unwilling to pay. The end result being the physician is called upon to pay some attorney several times more than the original fee amounted to. Even when a physician secures a judgment, after the alleged malpractice charges fall flatly to the ground, he has only won a phyrric victory. In other words there is no use to fight unless there is something worth fighting for. It is admitted that it is irritating to have someone beat you out of a small fee, but probably common sense would indicate that in many cases it would simply be best to forget the matter, mark the patient off your records and advise your colleagues that he is a rascal and let the matter end. In connection with these suits we will quote from the annual report of the Committee on Medical Defense of the Ohio State Medical Association; and certainly too often there is a physician secretly behind the scenes, who if the truth were known, is the direct cause of a malpractice suit against his brother physician. The "gist" is this—"If doctors were a little less critical of each other's work, a little less given to currying favor with their patients by off-hand condemnation of the prescriptions or the work of previous medical attendants, often without knowing the facts and circumstances under which such prescriptions were given or the professional service rendered, fewer of their professional brethren would be the subjects of damage suits and fewer of them would be called to the stand to explain what they meant by such off-hand and ill-advised criticism, which is often the first inspiring cause for the lawsuit which follows."

It would be well to remember in these strenuous times that people are in an irritated state of mind and will snarl and snap at a doctor who has rendered them good and efficient service. Probably they are no madder at the doctor than at everybody else, just on general principles after his dissatisfaction and the result in a useless suit.

INDUCED MALARIA IN THE TREATMENT OF GENERAL PARALYSIS

For sometime the treatment by the infection of patients suffering with paralysis by infection with malaria has been used with more or less success. Recently the United States Public Health Service

cooperating with the State Hospital at Columbia, South Carolina, inaugurated a program of study of these cases. They noted that for several decades psychiatrists had known that cases of general paralysis which became infected with febrile disease frequently showed complete remissions for long periods of time. For that reason the inauguration of a high temperature was undertaken by means of deliberately infecting the patient. Many remarkable cases of improvement have been shown after such treatment. However, lately there has been substituted, what theoretically is probably a better and safer form of treatment and that is the production of elevation of temperature by the use of diathermy. It is said that such rises in temperature so produced, are as effective as those produced by the infection of a patient with malaria. In some cases malarial infection naturally makes them very ill. The Public Health Service Bulletin does not seem to consider that phase of the matter. It is believed that an attempt should first be made to esablish high febrile conditions with diathermy rather than by infection with malaria. If the febrile condition, induced by diathermy, is successful it would seem that the patient would, or should be in better condition than if directly infected with the malarial plasmodium.

VACATION PERILS

We have them with us annually, we try to call attention to them that often. Most people are very well aware of their dangers but probably the majority of the people are not. Very likely one of the most dangerous things to people is the front cover pictures to be seen on any one of the numerous "Outdoor" magazines. It usually shows a lake or stream, with a tent set up and the cooking going on outdoors. There is no place in the United States where there is not a little danger in such trips. Some portions of the country are positively dangerous. The writer recalls entire parties returning with well developed malarial infection, all of which was unnecessary, had the simplest preventatives been used.

We will undertake to list some of the things which may infect, affect or trouble the vacationist, if he is not careful. The most dangerous, likewise the most rare, is snake bite. For that we have anti-venom, which may be bought outright, but is rather costly, or it may be rented by the day from most any well equipped drug store. One of the dangers not much thought of, yet too commonly indulged in, is the use of our celebrated home-made "corn" whiskey. Sometimes it is made of corn, sometimes of bran or chops and sugar, but almost invariably it is new, raw and positively dangerous, even if it were made in a good still, but most of it is made in tin tubs with rubber hose, etc. The only preventative of this is not to use it. Poisoning from poison oak or from various members of the rhus, family is not uncommon. Under proper treatment half of the cases subside in about 2 to 3 days but some of them become very severe and some people are peculiarly susceptible to its influence. The automobile has brought with it enormous dangers. The vacationist is usually in a hurry, he is on poor roads and as a rule is a stranger to its pitfalls and is likely to find himself overturned in a ditch, his car may burn up or he may have a fractured skull, or broken neck, or all the way down to no injuries whatever, nevertheless it is a danger not to be overlooked. The woods and hills are rough, falls and injuries from them are not at all uncommon, but it is doubtful if one party out of fifty or one hundred is supplied with the simplest first aid kits. The doctor should advise his patients of the benefits from simple iodine, mercurochrome, phenol and zinc oxide ointment, clean gauze, bandages, etc. Campers often return with very irritated and aggravated skin conditions due to insect bites. It is difficult to protect against these, except with the immediate application of various forms of antiseptics which may be carried along and applied by any intelligent person.

The records of our Mexican occupation, just prior to our entry into the World war, when we had troops scattered from the Pacific to the Gulf, who were sleeping out doors, showed that we had more trouble with the bites from simple insects than from the most poisonous snakes and scorpions.

In closing one should not forget the necessity for pure water. There is very little running water in the United States that is not more or less dangerous. Typhoid and dysentery may be prevented by the use of vaccine and the boiling or other simple means of sterilization of water.

In the role of guardian to hundreds of his friends and patients, the Oklahoma

physician should remember these things—warn of the dangers and avoid its occurrence rather than wait for the case to develop and demand treatment.

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Editorial Notes—Personal and General

DR. J. HUTCHINGS WHITE, Muskogee, is spending some time in New York.

DR. PAT FITE, Muskogee, will spend two weeks of July at his summer home in Nevis, Minn.

DR. AND MRS. CHARLES E. BAKER, Oklahoma City, visited in Indianapolis and New York in June.

DR. H. T. BALLANTINE, Muskogee, left June 24th for a ten days pleasure trip to points in Kentucky.

PHYSICIANS OF OKMULGEE entertained physicians from neighboring counties at a golf tournament, with all the trimmings, June 16th.

DR. M. P. SHY, Sedalia, Mo., Assistant Surgeon for the M. K. & T. railroad, was a guest for several days, in June, of Dr. W. P. Fite, Muskogee.

DOCTORS F. W. EWING, M. K. Thompson, and C. E. White, Muskogee, have returned from a fishing trip on the Kiamichi river, where they spent a week in June.

THE ELEVENTH ANNUAL SESSION AMERICAN CONGRESS OF PHYSICAL THERAPY will be held September 6-9, 1932, Hotel New Yorker, New York.

DR. L. J. MOORMAN, Oklahoma City, dean of the University of Oklahoma school of medicine, was elected president of the National Tuberculosis Association at the annual convention in Colorado Springs, Colorado, in June.

THE AMERICAN BOARD FOR OPHTHALMIC EXAMINATION will be held Monday, September 19th, 1932, at Montreal, at the time of the meeting of the American Academy of Ophthalmology and Oto-Laryngology.

DR. F. E. WARTERFIELD, Muskogee, was elected to fellowship in the American Urological Association at its annual meeting in Toronto this year. Dr Warterfield has been a member of this Association for many years.

GARFIELD COUNTY MEDICAL SOCIETY were guests of the Staff members of the Baptist Hospital, Enid, June 2nd, at a dinner, which was followed by a program, during which several papers on medical and surgical matters were presented.

BRYAN COUNTY MEDICAL SOCIETY was entertained with a picnic supper at the home of Dr. B. B. Coker, Durant. Following the supper Dr. J. T. Wharton, read a paper on the "Classification of Physical Findings of World War Veterans."

CANADIAN COUNTY MEDICAL SOCIETY met June 3rd, at the Southern Hotel, El Reno. The program was given by Drs. E. D. McBride, E. Goldfain and E. Margo, of the McBride Hospital, Oklahoma City. The meeting was presided over by Dr. D. F. Stough, Sr., Geary. Program consisted of papers on arthritis and back injuries.

JACKSON COUNTY MEDICAL SOCIETY met May 3rd at Waurika. Dr. E. D. Mabry, Secretary, announced the following program:

"Specific Urethritis and Complications" by Dr. W. P. Rudell, discussed by Drs. J. R. Reed and L. H. McConnell.

"Breech Presentations Management" presented by Dr. Jesse Bird, discussed by Drs. E. S. Crowe and Knox Collier.

MUSKOGEE COUNTY MEDICAL SOCIETY was entertained with a program July 6th, arranged by the Petrolagar Laboratories, of talking motion pictures, the following subjects being shown and discussed:

"Anatomy of the Female Pelvis and Perineum."

"Salpingectomy and high Fundus amputation for residuals of Tubal Disease."

"Repair of Urethrocele, Cystocele and lacerations of the Cervix."

"Repair of second and third degree lacterations of the Perineum."

These films were prepared by Dr. Harold O. Jones, Associate Professor of Gynecology, Northwestern University, Chicago, Illinois.

SOUTHERN OKLAHOMA MEDICAL ASSOCIATION presented for its program, June 14th at Anadarko, the following:

Address of Welcome—Hon. Sam L. Wilhite, Anadarko.

Response—Dr. A. M. McMahan, Duncan.

Common Sense Management of Chronic Arthritis—Dr. E. Goldfain, Oklahoma City.

Diseases of the Thyroid Gland and Treatment—Dr. Frank H. McGregor, Mangum.

Focal Infections—Dr. G. S. Barger, Purcell.

Diseases of the Oral Mucous Membrane—Dr. C. P. Bondurant, Oklahoma City.

The Cancer Question—Dr. LeRoy Long, Oklahoma City.

Six o'clock dinner was served at the Presbyterian Church.

ABSTRACTS • REVIEWS • COMMENTS AND CORRESPONDENCE

SURGERY AND GYNECOLOGY

Abstracts, Reviews and Comments from LeRoy Long Clinic
714 Medical Arts Bldg., Oklahoma City

The following are abstracts of reports made at the meeting of the Paris Surgical Society (Societe de Chirurgie) April 20, 1932, and published in La Presse Medicale, April 30, 1932.

Two Cases of Subdural Hematoma in the Child (Deux Cas d'hematome sous-dural chez l'enfant) reported by Mondor for Fevre and Bertrand.

1. A child 4 years of age suffered a trauma of the head. After a free interval, there was coma. A trepanation on the right side disclosed a tense dura bluish in color. When incised there was escape of blood, after which the brain resumed contact with its envelope. Closure without drainage. Rapid and complete recovery.

2. In a child of 11 years coma appeared five days after trauma of the head. Evidences of pain on pressure in the right temporal fossa, oedema of the right temporal region, and a right sided Chvostek seemed to indicate localization on the right side, notwithstanding the site of the trauma was in the occipital region. Trepanation disclosed a tense, bluish, non-pulsating dura. When it was incised there was rapid escape of red blood and a number of small dark clots—followed by expansion of the brain to its normal extent. Wound repaired without drainage. Recovery.

In connection with these reports, Mondor insists that fracture of the skull in children is not as rare as it is usually thought to be and points out that extra-dural hematoma in the child is not rare.

Subdural Hematoma (Hematome sous-dural) reported by de Martel.

A man of 38 fell on his head (une chute sur la tete), but did not quit work. Two months later there was intense headache, vomiting and psychic disturbances. A tentative diagnosis of subdural hematoma was confirmed by lumbar encephalography. After trepanation a tense, purple, non-pulsating dura mater was incised, and a voluminous hematoma occupying the entire external surface of the left hemisphere was removed. In repairing the defect in the soft structures, a drain was placed in contact with the surface of the brain. Recovery was rapid, and all disagreeable symptoms disappeared.

In closing the report, de Martel calls attention to the frequency of subdural hematoma after light trauma of the head. The development is often tardy, and seems to bear a close relation with a pathologic state of the meninges.

—LeRoy Long.

Tuberculosis of the Pubis (Tuberculose du Pubis) by P. Fabre and Vireuque, Toulouse, France. La Presse Medicale, May 28, 1932.

A woman of 54 years, the mother of four children, had severe pain in the pubic region for five months with absolute functional impotence. There were two large collections having the characteristics of "cold" abscesses—one on the inner side of the right upper thigh; the other in the abdomen just above the pubis. There was irregularity, thickening and tenderness over and about the symphysis. Radiographic examination showed gross lesions of the bones forming the joint.

Treatment consisted in wide curettage of the involved bones and complete extirpation of the abscesses, including some contiguous muscle.

The authors call attention to the importance of age in tuberculous localization about the pelvis, pointing out that in the young there is frequent invasion of the acetabulum (localization acetabulaire), and in older people involvement of the symphysis pubis (localisation angulo-symphysaire) which is explained by the development of secondary centers of ossification.

The authors insist that the more frequent employment of radiography in connection with pain and distress in this region would establish the relative frequency of tuberculosis of the pubis.

—LeRoy Long.

Malignant Tumor of the Psoas (Tumeur Maligne du Psoas) by J. P. Tourneus and Gouzi, Toulouse, France. La Presse Medicale, May, 28, 1932.

A young woman of 21, without antecedent history, hereditary or personal, presented an abdominal tumor the size of a fetal head, with pronounced projection into the right flank. It was smooth and fixed. A radiograph showed cecum pushed toward mid-line. The film of the tumor showed a regular and uniform shadow without evidences of bone formations. The diagnosis was enchondroma.

Operation disclosed a tumor developed at the expense of the psoas muscle. It was tightly adherent to the vertebral column and in intimate relation with the iliac vessels. Extirpation was difficult. Histologic examination showed that the tumor was a rhabdomyoblastoma.

—LeRoy Long.

Plantar Pain in Front of the Heel—An Early Sign of Post-Operative Phlebitis—(Le Signe de la Douleur Plantaire Pre-Talonniere Pour le Diagnostic Precoce des Phlebites Post-Operatoires). By M. Le Professeur Ducuing,, Toulouse—La Presse Medicale, May 21, 1932.

Reference is made to a description of the sign by Denecke, of Germany, in 1929.

There is pain and tenderness of the sole, about the mid-line, and just in front of the heel. It corresponds with a point where the plantar ves-

sels and nerves are crowded close together between the deep muscles and superficial flexors without much fat protection. The pain appears several days after operation—often about the time the patient is first out of bed. There is tenderness at the same point—sometimes tenderness before subjective pain.

Denecke believes that phlebitis of the leg after abdominal operations begins in the plantar veins, and assigns that as a reason for the early appearance of the sign. Ducuing does not agree with this belief, he believing that phlebitis of the leg after abdominal operation propagates from the pelvic veins—certainly a much more reasonable view.

Ducuing has not found the sign of plantar pain constant. He thinks it has importance when present, but he calls attention to certain other signs of probably much more importance—abdominal distention, late urinary troubles, oedema of the pubis, horripilation, rectal tenesmus.

Taking into consideration the relative frequency and tremendous importance of phlebitis and embolism after operation, the author emphasizes the importance of an early diagnosis, and strongly advises the complete immobilization of the leg as soon as phlebitis is suspected.

Comment: Two signs have served us well in making an early diagnosis of post-operative thrombo-phlebitis: (1) There is frequently tenderness when pressure is made in the extreme lower abdomen in the direction of the iliac vessels, and often there is subjective pain in this locality. (2) A very early and very valuable sign is the increased palpable density of the calf of the leg on the affected side when compared with the other calf. On inspection the legs may look exactly alike, but if there is a beginning phlebitis the increased density is strikingly apparent when there is simultaneous palpation of the two calves.

—LeRoy Long.

Diverticulosis of the Appendix. Frederick W. Mulsow. Archives of Surgery, Volume 24, No. 6, Page 923, June, 1932.

The author states that there are relatively few reports in the literature of cases of diverticulum of the appendix. To him this indicates that it is either a rare condition or that it is considered of little clinical importance. In the paper he states that the frequency of the condition is greater than is generally realized, and he emphasizes the possible clinical significance of diverticulum of the vermiform appendix.

He feels that the clinical significance of diverticulosis of the appendix has been underestimated. It has been said that diverticula are of little importance, since the appendix itself is a diverticulum. He disagrees with this statement. He reports 9 cases of diverticula in 661 appendices examined during the past 3 years. All except one of these cases were found in acute appendicitis. Of the 9 cases reported here, one occurred in a mucocele of the appendix, and in 3 perforation through a diverticulum occurred. In 6 there was a single diverticulum; in one there were 2 diverticula, in another, 5; and in the other, 6 diverticula. In 5 cases, the diverticulum was in the mesentery; in 2 cases they were antimesenteric; in 2 others they were in both locations. In 6 cases the diverticulum was in the distal half.

The age of the patients varied from 30 to 67, and 6 were men. There was a history of typhoid fever in 3 cases. In only one case was there no history of a previous attack or of previous intestinal disturbance.

The author feels that the presence of diverticula in an appendix may explain how, in recurring or subacute appendicitis, there may suddenly be perforation with relatively few characteristic symptoms. He feels that it is to prevent such sudden or unexpected perforation that many socalled chronic appendices are removed.

From the report it would appear that diverticula are more often than is realized the cause of sudden or unexpected perforation in socalled chronic appendicitis or recurring and acute appendicitis.

—LeRoy Long.

Chorio-epithelioma of the Uterus. Arthur H. Curtis, Chicago. Surgery, Gynecology and Obstetrics, Volume LIV, Number 6, June, 1932.

Dr. Curtis has presented here the details of a case, including beautiful colored drawings.

The most valuable part of the article, however, is a review of his long experience in gynecology, which has included only five cases of this disease, a fact which he is inclined to believe probably signifies the relative infrequency of this disease despite the idea that is sometimes gained that it is much more common.

—Wendell Long.

Malignant Ovarian Neoplasms. Charles C. Norris, M.D., and Douglas P. Murphy, M.D., Philadelphia, Pa. American Journal of Obstetrics and Gynecology, Vol. XXIII, No. 6, June, 1932.

This is an excellent short review of all the cases of malignant disease of the ovary which have been seen in the department of Obstetrics and Gynecology of the Hospital of the University of Pennsylvania. Its value lies in the careful conclusions drawn by these excellent authors, which are included verbatim because of their practical application.

1. Observations upon 153 malignant ovarian neoplasms, in 125 operated patients, and upon 33 of the latter which were kept under observation for three years or more are recorded.

2. Of 125 patients, 13 (10.4 per cent) died within thirty days of operation.

3. Of 93 patients traced for three years or more, 50 or 53.8 per cent, were apparently cured.

4. In the entire series of 153 specimens, the glandular type of ovarian carcinoma was nearly twice as frequent as the papillary type.

5. In our group of 89 follow-up patients, not including 13 who died within one month of operation, the glandular type was four times as malignant as the papillary type and the latter less malignant than the sarcomas.

6. Thirty-four and two-tenths per cent of 149 malignant tumors were bilateral. The difference between 149 and 153 specimens (conclusion, 1) is accounted for by 2 operations on each of four patients.

7. All types of tumor had approximately the same tendency toward bilateral involvement.

8. In 80 cases, bilateral involvement, regardless

of type, showed a higher three year mortality than the unilateral type.

9. When one ovary was grossly malignant at the time of operation (40 cases), the other ovary was found to be grossly benign, but histologically malignant in 17.5 per cent.

10. The percentage of three year salvage is higher following bilateral than after unilateral oophorectomy, in the proportion of 53.5 per cent to 34.1 per cent.

11. Uterine involvement of the corpus is a relatively frequent accompaniment of ovarian carcinoma; patients exhibiting this complication present an increased three year mortality. This further emphasizes the importance of a radical operation.

12. Patients with malignant ovaries, the seat of surface adhesions, removed at operation, exhibit a higher three year mortality than do those which present a smooth surface at this time.

13. Even advanced cases should receive the benefit of an exploratory section. This may be performed under local anesthesia. It permits relief of ascites, and histologic confirmation of diagnosis. By this policy occasionally supposed malignant conditions are found to be benign and such patients may be saved by an appropriate operation.

14. Bilateral oophorectomy and removal of the uterus should be the operation of choice, even though the second ovary appears to be grossly benign.

15. At the operating table all macroscopically benign ovarian tumors should be carefully examined. If necessary, when a unilateral oophorectomy is contemplated, a frozen section should be made, and everything possible should be done to exclude malignancy, before the abdomen is closed, and if malignancy is found, hysterectomy and a bilateral oophorectomy is the operation of choice.

—Wendell Long.

TUBERCULOSIS

Edited By

L. J. Moorman, M.D.
304 Osler Bldg., Oklahoma City

The Incidence of Tuberculosis Infection Among Students of a High School. Edith S. Hewitt and Rollin E. Cutts. The American Review of Tuberculosis, April, 1932.

This study was made in order to obtain a definite idea of the status of tuberculosis in the community and was part of the efforts being made to control its spread in Rochester, Minnesota. The group studied comprises representatives from the majority of the families in the community and gives a good cross-section of the community as a whole.

Out of a student body of 1,565, 1,328 were included in this study. Eleven and five-tenths per cent of this group gave positive reaction to the Mantoux test. Of the 34 students known to have been exposed to open tuberculosis, 61.8 percent had positive reactions. Lesions disclosed roentgenologically were few in number and not extensive. In the general group, 15.1 percent of those who gave positive tests also gave roentgenological evidence of some abnormality which might be attributed to tuberculous infection. Of those who had been in contact with open cases, 8.9 percent gave roentgenological evidence of tuberculous lesions. No case of active or of extensive latent tuberculosis was found. Evidence of tuberculous infection, however, was disclosed. That its most serious menance is to those who live in homes where infection is present is shown by the much greater percentage of positive Mantoux tests among students from such homes as compared with the lower percentage of positive tests found in the group as a whole.

The End-Treatment of Artificial Pneumothorax. John Chichester Dundee. The American Review of Tuberculosis. April, 1932.

The scant space given to the end stages of artificial pneumothorax treatment is striking in comparison with the large amount given to the subject of this treatment. Pneumothorax workers may be divided into 2 groups: (1) sanatorium or hospital workers; (2) private or clinic physicians. The number of the latter has been enlarged greatly in recent years with the general extension of the treatment until private physicians now frequently manage the last half of the treatment. This is advantageous to the patient in many cases since the re-expanding lung is best tested in a normal environment with a normal amount of work. The sanatorium worker seeks to obtain quickly the minimum degree of collapse conducive to healing all tuberculous lesions with the least discomfort and risk to the patient, while the city worker strives to end the treatment at the proper time with equal safety. The consensus of opinion is that this involves continuing treatment for from 3 to 5 years or even longer. The description and the end-treatment of certain different types of artificial pneumothorax are presented. In two types, phrenic avulsion, in a new capacity, is advocated to help obliterate the remaining pleural space, to prevent undue stretching of pulmonary scars and to diminish mediastinal retraction. Four successful cases are reported. The practice of allowing moderate to large amounts of fluid to remain in the pleural cavity for long periods is condemned since this tends to limit the re-expansion of the lung by increasing pleural thickening, pulmonary fibrosis and atelectasis.

Oleothorax. Ray W. Matson. The American Review of Tuberculosis. April, 1932.

Oleothorax therapy is closely related to pneumothorax therapy but is still too new a method of treatment to be properly evaluated. It requires more technical skill, keener judgment in the selection of cases and more careful observation of patients than does pneumothorax treatment. It is indicated during the course of pneumothorax therapy under the following conditions: (1) as a disinfection oleothorax; (2) to inhibit expanison of the lung in a threatened early obliterative pneumothorax; (3) as a compression oleothorax to re-establish collapse or to collapse rigid-wall cavities in which an intra-pleural pneumolysis is impossible. It is contraindicated in: (1) pleuropulmonary fistula with a large opening; (2) ordinary serofibrinous exudates complicating an artificial pneumothorax; (3) as a substitute for pneumothorax in patients who are unable to undergo artificial pneumothorax;

(4) inability to maintain collapse because of too rapid absorption of gas.

Either mineral or vegetable oil to which gomenol in a strength of 1 to 10 percent is added, may be used. Mineral oil is less absorbable and less irritating so is recommended in order to inhibit expansion of the lung while vegetable oil is preferable in the toxic, mixed-infection empyemata because its rapidity of absorption permits a penetrating action of the gomenol; it also possesses great nutritive value. Since gomenol in a strength of 5 percent is capable of killing the tubercle bacillus, it is recommended in tuberculous empyemata; in mixed-infection empyemata it should be used in 10 percent solution as weaker solutions are unable to destroy mixed-infection micro-organisms.

Oleothorax is not justified in the treatment of an ordinary pneumothorax empyema unless it tends to chronicity and toxicity since any substance, even air, when introduced into the pleural cavity, is likely to act as an irritant to which the pleura responds with an exudate-formation. For this reason oleothorax therapy is not intended to supplant pneumothorax and should not be employed except when pneumothorax cannot serve its purpose. Oleothorax should never be attempted in the absence of a purulent exudate without first testing the sensitiveness of the pleura to oil. In converting a pneumothorax into an oleothorax air should be aspirated and oil introduced in units of 20 c.c. in order to avoid disturbing the intrapleural pressure; the pleura should be prepared first for higher oil pressure by preceding higher air pressures. Since reactions of many types, both early and late occur in a high percentage of these cases, great skill is required, not only in the selection of suitable cases but in their after treatment, observation, and care.

A series of 100 cases covering a period of 5 years is reported here. Disinfection oleothorax alone or combined with inhibition or compression oleothorax 50 cases. Results satisfactory in 60 percent; unsatisfactory in 40 percent due to pleurocutaneous fistula, pleuropulmonary fistula, reformation of purulent exudate and failure to disinfect the pleural cavity. Inhibition and compression oleothorax 50 cases. Results satisfactory in 50 percent; unsatisfactory in 50 percent. Of these treatment was abandoned in 20 cases because of a persistent exudate formation and in 5 cases because of severe constitutional reactions.

Some Reasons for the Treatment of Tuberculosis Patients in General Hospitals. Arthur T. Laird and Roy M. Mayne. The American Review of Tuberculosis, April, 1932.

The provision of separate wards or rooms for the care of tuberculous patients in general hospitals has been urged for many years and is being successfully carried out in several large hospitals. The benefit to both patient and hospital is very great. Modern diagnosis requires much equipment found in the general hospital but not in the ordinary sanatorium as only the largest are able to afford it. The hospital supplies the need for an observation station where proper care can be provided while the patient is being studied—it also provides emergency care and prompt removal of infectious cases. One of the hospital's greatest contributions is the care of moribund patients who would receive no benefit from the sanatarium and whose presence has a depressing effect on the other patients. Sanatarium patients frequently need hospital treatment for various reasons and modern transportation makes their transfer simple and safe. The hospital benefits in that it is constantly admitting patients with tuberculosis under other diagnoses and its personnel would be much safer were these patients correctly diagnosed so that proper precautions might be taken. By admitting and giving these patients the care to which they are entitled the hospital not only serves the general needs of its community much more effectively but keeps its beds better filled and provides this training for its interns and pupil nurses. It benefits physicians by making it possible for them to follow the patient's daily progress easily and to gain by discussions, both formal at staff meetings and informal at various convenient times—more general interest and knowledge of tuberculosis is thus created. The successful experiments of St. Mary's and St. Luke's Hospitals in Duluth in caring for tuberculous patients are reported in detail.

Pulmonary Tuberculosis Without Pleural Involvement Simulating Chronic Adhesive Pleurisy. Edward N. Packard. The American Review of Tuberculosis, April, 1932.

Four cases are reported which presented all the physical and roentgenological signs of an extensive adhesive pleurisy, two of which cleared up completely with no signs remaining, while the other two were able to take artificial pneumothorax treatment with good clinical results. The author feels that such patients should not be denied an attempt at artificial pneumothorax if it is indicated and that it should be attempted in all cases before a thoracoplastic operation is done.

The Danger Period in the Treatment of Pulmonary Tuberculosis. John B. Hawes, 2nd. The American Review of Tuberculosis, April, 1932.

Among the factors operating to prevent adequate supervision of tuberculous patients during their long period of convalescense the economic one is probably the most important. Many sanatoria have not sufficient money to employ a properly trained person to instruct out-going patients fully on the dangers of the period just ahead of them, while the regular force have insufficient time to take on such a duty; nor have the majority of patients sufficient financial resources to complete their cure properly. Ignorance and lack of ordinary intelligence are also important factors. The patient is well cared for while acutely ill and is usually fairly easy to handle during that period. He becomes, however, increasingly hard to handle as he feels better and is all too often permitted to leave the sanatorium with little understanding of his condition and only the vaguest instructions as to his future course. The city poor are cared for in the best manner at this time as they are looked up by some of the regular health agencies immediately on their return and forced, even against their will, to return to the clinic every three months. It is the well to do and those in moderate circumstances who suffer from lack of supervision for various reasons. An educational campaign, not only among the patients but among sanatorium and private physicians would be a great help in correcting this condition.

Artificial Pneumothorax Abandoned and Re-established. Eli H. Rubin. The American Review of Tuberculosis, April, 1932.

The fact that pleural symphysis does not invariably occur after artificial pneumothorax is well illustrated by the case reported here. Satisfactory compression was obtained again after a lapse of almost four years. Several other similar cases have been reported and are of practical significance in artificial pneumothorax therapy demonstrating as they do that the only way to ascertain whether a pleural space is free or obliterated is to insert a needle attached to a manometer.

Observations on Accessory Roots in Phrenic Exairesis. Lincoln Fisher. The American Review of Tuberculosis, April, 1932.

Phreniphraxis has not proved justifiable in the author's experience, except that injections of alcohol possibly have some value as a brief test measure in doubtful cases. He feels that if collapse therapy is indicated at all in a given case, it should be maintained as a permanent factor of safety for the lung in question. This is especially true since dyspnoea or undesirable parenchymatous changes which occasionally occur after phrenicectomy are not prevented by temporary crushing as they occur long before the diaphragm resumes function. The small number of his cases having a crushing operation later required an exairesis entailing not only the pain and inconvenience of a second operation but also increased operative risk and the added difficulties attendant upon more or less scar tissue in the original wound; identification of accessories and avulsion being rendered almost impossible by dense scar tissue. Since simple phrenicotomy often fails to produce complete or permanent paralysis of the hemidiaphragm due to accessory phrenic roots, it is of great importance to identify and resect all such branches or roots. This does not ordinarily require an appreciably larger incision altho it does take more time.

In 36 phrenic exaireses, one or more accessories were found in 22 cases or 60 percent. Five had multiple accessories, four being the greatest number found in any given case; in 8 an accessory accompanying the nerve to the subclavius was found and resected. In one case a double phrenic was present, the two being of equal calibre, crossing the scalenus anticus and passing beneath the clavicle without uniting. Before exairesis of the main-stem, resection of all accessory roots passing separately beneath the clavicle is suggested, as an aid to avulsion and as an additional safeguard against injury to the subclavian vessels. In this series 24 phrenic nerves or 66.6 percent were completely avulsed by this method, the greatest length being 44 cm, the shortest 10 cm. Complete paralysis and elevation of the diaphragm resulted in every case.

UROLOGY and SYPHILOLOGY

Edited by Dr. S. D. Neely, M.D.
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Leg Ulcers of Unrecognized Etiology. Norman J. Kilbourne, Jour. A. M. A., June 4, 1932.

A series of 150 cases of chronic leg ulcers is cited. He divides the etiological factors into 6 groups namely, metabolic, circulatory, infectious, drugs, neurotrophic, and malignant. Under infectious are placed Wassermann-positive, and Wassermann-negative, mycotic and tuberculous. Eleven cases were diagnosed as Wassermann-negative, and nine of these had the diagnosis established.

He states that the diagnosis of syphilitic leg ulcer may be extremely confusing, clinically serologically, and roentgenologically. Typically, luetic ulcers are painless, punched out, have irregular borders, and are located on the lateral aspect of the leg. The author states he has found these ulcers in various locations, without typical syphilitic configuration painful from the start, but heal rapidly after antisyphilitic therapy. Radiography is confusing at times, many non-syphilitic ulcers show extensive periostitis not only immediately beneath the ulcer but along the whole shaft of the tibia, resembling a saber-shaped tibia. Serologically it must be remembered that a negative Wassermann means nothing. Seven out of seventeen of his cases had a negative Wassermann. Lillte aid has come from a provocative Wassermann. He has had two patients with a positive Wassermann to respond when the underlying cause was removed, as invisible varicose veins. He outlines a simple therapeutic test which is reliable, consisting of injections of Bismuth compounds, intramuscular injections of milk, and sodium iodide by mouth. Syphilitic ulcers show marked improvement. Arsphemanines are not reliable for cure in this type of tertiary syphilis. Every chronic ulcer not explicable on other grounds should receive this therapeutic test. He calls these ulcers Wassermann negative rather than leutic, due to the fact that the action of the iodides on the thyroid and the thyroid on the skin is somewhat known, also there may be non-specific action of the bismuth compounds on these ulcers.

Pulmonary Syphilis. Adolph Hartung, M.D. and John Freedman, M.D., Chicago, Ill. Jour. A. M.A., June 4, 1932.

A diagnosis of pulmonary syphilis is generally regarded with a good deal of skepticism. Carrera in a careful post mortem study of 152 known luetics found 12 cases of undoubted anatomical syphilis of the lung. In 29,680 routine post-mortems Erickson found but 19 cases of lung syphilis, and in 240 autopsies he found 28 cases of lung syphilis. The author states that lung syphilis is never primary, but only incidental to the widespread ravages of the disease. Ultimate diagostic proof in most cases is not made; in a great majority of the cases reported the diagnosis is based on clinical findings. In arriving at a diagnosis the following criteria should be followed:

1. History of syphilis chancre, muco-cutaneous lesions, cardio-vascular lesions, stigmata of syphilis, miscarriages and stillbirths.

2. Repeated examinations of the sputum to rule out tuberculosis, mycotic infections, and other spirochetal infections as Vincent's infection.

3. Signs and symptoms of stubborn, progressive pulmonary lesion. In lung syphilis the signs are marked while the symptoms are mild.

4. Demonstration of spirochetae pallida, (very rare) in dark field of specific stain.

5. Serological examinations. When positive,

they indicate the presence of syphilis, but do not mean that a pulmonary lesion is Luetic.

6. Roentgen examinations. When these show chronic pulmonary disease involving the roots, middle lobe or base of the lung in a patient with unquestionable evidence of syphilis, and in whom Tuberculosis has been ruled out by every available means, the possibility of syphilis of the lung should be given consideration either alone, as a complication, or as a coexistent condition.

7. Therapeutic test. Improvement under antisyphilitic treatment is contributory evidence in its favor but is by no means absolute. This is the deciding factor in the clinical diagnosis. General clinical improvement, disappearance of symptoms, as well as clearing up of the lesion.

8. Anatomic confirmation: when possible this should be done; demonstration of syphilitic changes the nature of which there can be no doubt.

In this article there is much information on the roentgen evidence of lues of the lung, he states that the roentgen examination is of the utmost importance in the differential diagnosis, especially in elminating other conditions, also that there is nothing that can be said dogmatically in regard to the roentgen appearance of pulmonary syphilis.

Don't be content to make a diagnosis of gonorrhea just because the patient says he has it and when you see a discharge from the urethra. Stain a specimen of that discharge by Gram method, examine it microscopically, and see whether Gram negative intracellular diplococci are present; many discharges are caused by chemical irritation.

Don't give a patient a prescription for medicine and tell him to get a syringe and treat himself without first carefully teaching him just how to treat himself. Many serious complications follow self treatment.

Ohthalmologic Importance of Focal Infective Prostatitis. P. S. Pelouze, Phila. Arch. of Ophthalmology, March 1932.

The author states that 35% of all males beyond 35 years of age have prostatitis, and that 72% of all males with focal infective symptoms have prostatitis. Eye conditions are frequently due to infections of the prostate, and are kept up by this condition. He mentions the triad of conditions most frequently found as focal points, teeth, tonsils, and prostate, and in addition the nasal accessory sinuses. Increase in symptomatology of the eye condition follows manipulation of the prostate gland when it is the seat of the infection, and the author warns against too vigorous treatment of the focus, that it is analagous to the vaccine reaction with marked specificity for distant lesions. The treatment directed to the prostate should be governed by the tolerance to the toxins liberated. He states that prostatic massage should not be carried out oftener than twice per week, and not repeated within three days of the subsidence of the reaction caused by the previous treatment.

Grapes and Urinary Acidity. Editorial, Jour. A.M.A., May 28, 1932.

The reaction of the foods we eat is no criterion of their behavior in metabolism. Citrus fruits, acid in reaction, which is caused by organic acids as citric acid, when oxidized in the body, as a rule, leave a residue of basic ingredients to be disposed of by this body. It is possible thus to bring about with acid fruit juices metabolic consequences just as marked as those induced by alkaline sodium bicarbonate. Sodium citrate is used in place of sodium bicarbonate to induce alkalization. Protein foods and cereals as a rule give rise to acid end products, while vegetables are potentially alkaline, thus acidosis and alkalosis can be combated by the ingestion of potential acid or alkaline foods. Herbivorous animals normally have alkaline urine, while carnivorous animals have acid urine. Blatherwick and Long have reported that even when large amounts of orange juice (acid) are ingested there is a production of alkaline urine, that it is impossible to over-reach the organism's ability to oxidize the contained citric acid even with 48 gms of acid equivalent. Organic acids occur in foods which are not so readily oxidized. Oxalic acid is an extreme illustration. Tartaric acids have been reported to exhibit resistance to oxidation. Grapes are rich in tartrates, thus there has been some doubt as to the behavior of grapes from the standpoint of their potential reaction in the body. Saywell of the University of California College of Agriculture at Berkley has reported on this, which included persons on a control diet and on the same basal regimen supplemented by grapes, fresh natural grape juice, detartrated grape juice, natural grape juice concentrate, concentrate-tartrate mixture, Thompson's seedless raisins, and Muscat seeded raisins. Increase of urinary hydrogen ion concentration occurred from 0.8 to 1.2 units. Decrease in ammonia secreted and a corresponding decrease in total acidity. A correlation of the alkalinity of ash and the physiologic reaction was apparent. Grapes and grape products with the greater alkalinity of ash were associated with a more basic body reaction. 90% or more of the organic acids ingested in grape products were oxidized in the body as a rule, thus grapes and their products behave like many other fruits in the body. The physiological advisability of their continued use in large quantities over long periods of time is open to question.

Hunner's Ulcer. A. I. Folsom, Dallas, Texas State Journal of Medicine, February 1932.

The author states that this name is probably a misnomer, this condition has been called ulcer, pan-mural cystitis, interstitial cystitis, et cetera. It is characterized by a chronic inflammatory process involving the submucous layers of the bladder wall, including the submucosa proper, and the various muscular layers. No organisms have been isolated from the ulcers. The walls of the bladder are thickened, yet the mucous membrane is involved little, and for this reason the condition is extremely hard to recognize. Etiology is not known. Hunner suspected focal infection, yet the author states that this condition is found more frequently in women and thus he doubts this etiological factor. The symptoms are quite characteristic, diurnal and nocturnal frequency and urgency of urination. Catheterized, specimen does not reveal any marked

change except perhaps an occassional red cell, a sharp knife like pain located anywhere in the region of the pelvis, this is worse when the bladder is distended or there is a jolt to the pelvis as in riding. The cystoscopic examination may not reveal any abnormality, orifices normal, mucosa normal, until you search the dome carefully and see a tiny speck which enlarges on distension, and on manipulating this excruciating pain is revealed. The author states that fulguration, overdistension, and resection are the remedies to be tried.

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NEUROLOGY AND ENDOCRINOLOGY

Abstracts, Reviews and Comments Edited by Henry H. Turner, M.D.
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Conditions of Delirium. Prof. H. Krisch, Psych., Univ. Clinic, Greifswald. (Fortschritte der Therapie, No. 2, 1932). Abst. Ars. Medici, 10: 205, May, 1932.

Conditions of delirium occur most frequently with cerebral arteriosclerosis, diseases of the kidneys, infectious diseases (typhoid fever, pneumonia, meningitis), intoxications (alcohol), severe trauma of the head and sepsis. Treatment of the fundamental disease is, of course, of the greatest importance; in practice, however, it is often necessary to proceed symptomatically and, first of all, to calm the patient. For this purpose the author makes the following suggestions. To prevent the patient falling out of bed, the latter should be protected by padding at the sides or a hammock stretched over it. The "strait-jacket", a canvas coat with very long sleeves, the free ends of which can be knotted at the back, has unfortunately fallen into disrepute although it is a very gentle method of preventing restless patients harming themselves. If a patient has any dressings, after operation for instance, which he might tear off, mittens are very practical. As raving patients easily abrade their skin, the latter should be greased. With patients suffering from infectious diseases, febrifuges (possibly lukewarm baths) will have a soothing effect. Since motor excitement greatly exhausts the physical strength the patient should have plenty of nourishment and, especially, an ample supply of fluid (hypertonic sugar solution); cardiac stimulants should be given from the beginning of the delirium. Special value should be attached to cardiac stimulants in "delirium acutum" (highest degree of psychomotor excitement) as it is just with such hyperkinetic conditions that sudden deaths occur. Of medicinal means for soothing the excitement Luminal (up to 0.3 gm.) is most suitable; it must, however, be discontinued immediately if the dirty red exanthema due to Luminal develops. In cases where the motor excitement reaches such a degree that nursing becomes difficult or that the patient's life, already weakened by the fundamental disease, is endangered, hypodermic injections of Scopolamin must be resorted to. This remedy is usually given in too small doses by physicians who are not alienists; in order to be certain of the effect it is necessary, with an adult male, to inject 1 mg. hypodermically. The maximum dose in a day is 3 times 1 mg., in the daily practice of psychiatrical clinics it is, however, frequently exceeded without harmful effects. In order to raise the potency of the effect of Scopolamin, 0.01 gm. morphine may be added unless the respiratory centre is already impaired by the fundamental disease. Further, as unconscious persons have, in any case, an inclination to the retention of urine, there is additional need for great caution in the use of morphine. No unfavorable results have been experienced from Scopolamin in cases with weak hearts. With extreme conditions of delirium it is advisable to transfer the patient to a psychiatrical department where the nursing staff knows by experience how to deal with excited patients so that less compulsory measures need be used than in other departments.

Psychiatric Reactions from Dysinsulinism in a Diabetic. Cronin, H. J., J. Nerv. & Ment. Dis. 74: 478. 1931.

In the successful treatment of any organic disease the psycho-physical organism as a whole must be considered rather than the isolated treatment of the symptoms relating to one organ. In the case described there was a general constitutional inferiority with glandular, ophthalmic, neurologic and psychiatric symptoms. The patient was a student 22 years of age of the asthenic type who complained of mental confusion, examination anxiety, inability to concentrate, memory difficulties and physical weakness. She was overconscientious, hypercritical, and unfriendly toward associates. At times of stress in college she developed eye symptoms which were unrelieved by refraction or treatment. Some months previous to examination she developed a series of skin infections that required surgical treatment. Concomitant with the skin infections, she was mentally confused, repeated words in a stereotyped manner and complained of insomnia. Physical examination revealed an old arrested tuberculosis, glycosurea 2½%; and blood sugar 200 mm. She was 24% underweight. Diabetic therapy was carried on with psychotherapy. When the patient increased her insulin or decreased her carbohydrates she had a return of the ophthalmic and psychiatric reactions. After one particular self-administered injection, she had an attack of mental excitement of four hours' duration in which diplopia was the first symptom. Then followed localized areas of anaesthesia, mental confusion, irrational behavior and assaultive attacks. After the height of the attack had lessened, she was elated and unrepressed. In this attack there was a reversal of her usual character traits with belligerency, aggressiveness and expression of repressed erotism. Following the attack she became again quiet and docile. As the patient was observed over a period of months there was some improvement in the diabetic but there was a gradual loss of effect toward the environment with listlessness and a slight degree of mental deterioration.

—Author's Abst.

Osseous Diseases and the Parathyroids. (Maladies Osseous et Parathyroides). Snapper, I., Ann. de Med. 29: 201. 1931. Abst. Endocrinology. 16: 330. 1932.

A detailed description is given of a severe case of osteitis fibrosa (von Recklinghausen) in which removal of a parathyroid adenoma was followed by re-calcification of the skelton and symptomatic improvement which practically amounted

to a cure. In this and other cases reported in the recent literature, a negative calcium and phosphorus balance has indicated by excessive urinary excretion of calcium and phosphorus. The serum calcium has been high and the serum phosphorus below normal, conditions exactly opposite to those found in parathyroid insufficiency. The pathogenesis of this disease is thus clearly based on parathyroid overfunction. Biochemical examination of eight cases of osteitis deformans (Paget's disease) and one of Leontiasis ossea revealed normal serum calcium and serum phosphorus and normal urinary excretion of calcium and phosphorus in all. The operative recovery of normal appearing parathyroid glands from two of these cases was without influence on the course of the desease. While many pathologists, basing their opinions on anatomical features, consider that the skeletal disease of von Recklinghausen and that of Paget's are intimately related, it is evident that striking differences exist clinically, biochemically and in their respective pathogenesis.

Hyperthyroidism Associated with Parkinsonian Syndrome. Wechsler, I. S. and N. Savitsky, J. A. M. A. 97: 1283, 1931. Abst., A. M. A. Abst. Endocrinology. 16: 335, 1932.

The authors note that the association of exopthalmic goiter with paralysis agitans is comparatively rare. Most of the cases reported in the literature show that the association is an accidental one. In the majority of instances the hyperthyroidism preceded the onset of the Parkinsonian syndrome. In recent years, attention has been called to the presence of signs and symptoms referable to the vegetative nervous system in acute and in chronic encephalitis, which have a predilection for the basal ganglion-midbrain regions. But even before the involvement of the hypothalamic vegetative centers was recognized as the cause of metabolic and other disturbances, the sympathetic system was believed to be affected in exophthalmic goiter and to bear some relation to it. More recently, the suprarenals, the medulla of which is of the chromaffin sympathetic system, have been shown to stand in definite causal relation to hyperthyroidism. From time to time, suggestions have been made that physiologic or pathologic disturbances in the vegetative centers of the interbrain may have something to do with the production of many syndromes previously regarded as independent disease entities. The question, too, has been raised whether, in a syndrome such as hepatolenticular degeneration, the disease of the liver causes the changes in the brain, or, conversely, the involvement of the striatum leads to secondary disturbances in the liver. In encephalitis it has long been known that what may be regarded as dysthyroid symptoms were frequently a part of the clinical picture, even though there was no true exophthalmic goiter. The speculation is also justified as to whether the tremor of hyperthyroidism is not in effect the result of secondary changes in the striatum. In view of all this, the question now arises whether exophthalmic goiter may not in some way be the result of some altered physiologic state or pathologic change of the hypothalamic vegetative centers. The proximity of these structures to the regions affected in paralysis agitans and the occurrence of hyperthyroidism with Parkinsonianism in two cases reported by authors in which the one syndrome preceded the other may possibly furnish clinical confirmation of theoretical views. In any event the cases, aside from their speculative interest, are worthy of record because of their clinical rarity. Of clinical interest in both the cases was the difficulty in dissociating the hyperthyroid from the Parkinsonian tremor. The former is much finer and more rapid, but it overlaid the coarser and slower oscillations of basal ganglion origin. The improvement following thyroidectomy subtracted, as it were, the overtone of tremor and improved the underlying basal ganglion syndrome to some extent. But it may well be said that the thyroidal tremor is in reality of basal ganglion origin and caused by toxic changes in those structures. It is interesting, too, that the surgeons hesitated to operate, and it was only after urging by the neurologist and assurance that the paralysis agitans in itself was no contraindication that operation was performed.

The Influence of Stimulation of the Hypothalamus on the Activity of the Hypophysis. Dr. I P. Karplus and Dr. O. Peczenik. Proceedings of German Neuro. Society, Abst. Arch. Neuro. & Psychiat. 27: 967, April 1932.

After stimulation of the hypothalamus the cerebrospinal fluid shows a change in biologic characteristics: The pituitrin-like effect of the fluid on the guinea-pig uterus is increased. This change is due to a pouring out of pituitrin as a result of the stimulation. It was also found that this outpouring of pituitrin does not depend on stimulation of the cervical sympathetic or on a general stimulation of the animal, but that it is the direct result of the stimulation of the hypothalamus. It was shown also that the increase in the pituitrin is not secondary; it does not come from the blood. Apparently the hypothalamus possesses a hormone that regulates the mechanism of the hypophysis.

The Relation of the Sympathetic Nervous System and Generalized Lymphoid Hyperplasia to the Pathogenesis of Exophthalmic Goiter and Chronic Lymphatic Leukemia. Friedgood, Harry B., Am. J. Med. Sciences. 183: 841. 1932.

Exophthalmic goiter and chronic lymphatic leukemia are both characterized by an increased basal metabolism. The clinical symptoms of the two diseases are strikingly similar. There is a widespread lymphoid hyperplasia in Graves' syndrome somewhat comparable to chronic lymphatic leukemia, which the author states has not received sufficient attention. He calls attention to the predominance of the signs and symptoms of sympathetic nervous system hyperactivity in these maladies and suggests that this system plays a role of paramount importance in their pathogenesis. In his discussion he states that, though chronic lymphatic leukemia and exophthalmic goiter appear to be wholly unrelated clinical syndromes, careful investigation indicates that a striking and fundamental parallelism exists between these two syndromes. His summary and conclusions are as follows: Lugol's solution has a strinkingly parallel effect upon the clinical phenomena of exophthalmic goiter and chronic lymphatic leukemia; and, conversely, does not ameliorate the signs and symptoms of true hyperthyroidism induced by the ingestion of active

thyroid sybstance. These facts, in addition to the similarity which exists between the clinical picture and pathology of chronic lymphatic leukemia and exophthalmic goiter, indicate that these maladies are primarily independent of thyroid dysfunction. Exophthalmic goiter is probably not due to a hyperthyroidism, and its elevated basal metabolic rate and tachycardia seem to be independent of a hypothetical hypersecretion from a hyperplastic thyroid gland.

The sympathetic nervous system and the lymphatic system play a significant role in the pathogenesis of exophthalmic goiter and chronic lymphatic leukemia; and the effect of iodin is probably intimately related to the pathologic physiology of the sympathetic nervous system.

BOOK REVIEWS

GENERAL SURGERY, The Practical Medicine Series. Edited by Evarts A. Graham, A. B., M. D., Professor of Surgery, Washington University School of Medicine; Surgeon in Chief of the Barnes Hospital and of the Children's Hospital, St. Louis, Series 1931. Cloth, Illustrated, 804 pages, Price $3.00. The Year Book Publishers, 304 South Dearborn St., Chicago.

Annually the Year Book Publishers issue eight volumes, reviews of current literature of the last year, on certain specialties. This one devoted to surgery is issued by one of the masters in surgery of the century, Graham. To the busy surgeon this work will undoubtedly appeal, and as often the general practitioner must recognize eaerly conditions which may demand prompt surgery, the volume should also appeal to him.

WHITE HOUSE CONFERENCE ON CHILD HEALTH AND PROTECTION. Printed by Century Company, 353 Fourth Avenue, New York.

The results of this conference have been set fourth in a series of volumes covering the following:

"Nutrition Service in the Field", $2.00. "Body Mechanics: Education and Practice," $1.50. "Psychology and Psychiatry in Pediatrics: The Problem", $1.50. "Health Protection for the Pre-school Child", $2.50. "Growth and Development of the Child", $4.00. "Obstetric Education", $3.00.

These are a valuable contribution on the care of the child and mother. Space forbids a complete review and analysis of them, but the outstanding and important array of speakers and renderers of papers make of them an authority not to be disregarded by those interested in this type of work.

SURGICAL CLINICS OF NORTH AMERICA. (Issued serially one number every other month). Volume 12 No. 2, (New York Number, April, 1932). 306 pages with 84 illustrations. Per Clinic year (February, 1932 to December, 1932). Paper, $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company, 1932.

Among the interesting contributions in this issue are: "Chest Wall Defect with Bronchial Fistula" by Howard Lilienthal. Operations to close these are always difficult, as to offering permanent cure. "Preoperative and Postoperative Care" is presented by John F. Erdmann. Both pre and postoperative care are often of more importance than the me.e operation itself, therefore they cannot be too much considered. Too many of us grow into careless and slovenly habits in this respect. "Fractures at the Lower End of the Humerus in Adults", always dangerous as to prognosis is presented by James M. Hitz:ot. "The Clinical Application of Biological Endocrine Tests" by Robert T. Frank, contains among other interesting matters a short description of various pregnancy tests; the Aschheim-Zondek, Friedman, and the Frank-Goldberger tests. All depend upon injection of blood from the suspected pregnant person into immature mice, rabbits, etc. "Salivary Gland and Duct Calculi", is presented by Russel H. Patterson. "A Clinic in Reparative Surgery, Examples of Treatment of Keloids, Unilateral Facial Paralysis, and of The Various Applications of Skin Grafts" is presented by J. Eastman Sheehan. His idea of scars as to keloids lies in light approximation of the cut surfaces over a tube containing radium emanations, this on the theory that keloids are caused by an overplus or retained collection of undrained lmph at site of operation. J. William Hinton presents histories, analysis and treatment of G. I. cases under the title of "The Selection of Patients for Operation with Gastric and Duodenal Ulcers." Charles Gordon Heyd presents "Jaundice" definition, explanation of the underlying chemistry and pathology, classification based on Bilirubin determinations, and the significance of the Van den Berg test.

The volume contains much other fine material but above gives a good index of its high class.

AN EXPERIMENTAL AND CLINICAL STUDY OF PAIN IN THE PLEURA, PERICARDIUM AND PERITONEUM. By Joseph A. Capps, M.D., Professor of Clinical Medicine, University of Chicago, with the collaboration of George H. Coleman, M.D., Assistant Professor of Medicine, Rush Medical College. A Foreword by Anton J. Carlson, M.D., Ph.D., Chairman of the Department of Physiology, University of Chicago. Cloth, illustrated. 99 pages, Price $3.00. 1932. The MacMillan Company, New York.

The objection to this book is the fact that it contains no index, however one hundred pages may soon be digested. Pain is a symptom. When the patieent complains of a pain it is up to the doctor to interpret the reason or cause of pain and therein lieth difficulty. Pain in the right side (wrongly diagnosed as appendicitis—there may be rigidity, high blood count, etc., yet the entire trouble may be caused by a ureteral calculus). Some pains are almost pathognomonic of the trouble and point directly to the cause. Pain in the abdomen and chest are often very deceptive. The author once operated on a man for appendicitis, a question mark being behind the diagnosis. The appendix was perfectly normal, but the man died shortly thereafter from a severe heart condition and the pain was caused by an atheroma of the abdominal aorta. Pain in the chest is very deceptive and calls for a wide range of elimination. It may be due to anyone of the various pneumonias, a heart lesion or simply to an affection of one of the intercostal nerves. Of course there are other causes for

pain in the chest, but a pain in the pericardium, or region of the abdomen may be pointers to serious conditions, on the other hand vague and indefinite pain in the toes and feet; one may be dealing with a beginning of thrombo-angitis obliterans or Buerger's disease. I have known such cases to be long overlooked; unfortunately there was not much to do for them after discovery, but there is some satisfaction in knowing early what you were dealing with.

This is a valuable little book.

BIOCHEMISTRY IN INTERNAL MEDICINE. By Max Trumper, Ph.D., Clinicial Chemist and Toxicologist; formerly in charge of the Laboratories of Biochemistry of the Jefferson Medical College and Hospital and of the Psycho-Biochemistry Laboratory, Graduate School of Medicine, University of Pennsylvania, Philadelphia, and Abraham Cantarow, M.D., Instructor in Medicine, Jefferson Medical College, Assistant Attending Physician, Philadelphia General Hospital; in charge of Laboratory of Biochemistry, Jefferson Hospital. With a foreword by Elmer H. Funk, M. D., Sutherland M. Prevost Professor of Therapeutics at Jefferson Medical College. 454 pages with illustrations. Philadelphia and London. W. B. Saunders Company, 1932. Cloth, $5.50 net.

The growing importance of blood, urinary and other examinations in various diseases has for the last few years more steadily impressed itself upon all physicians and surgeons than decades heretofore. Renal and hepatic function are of such high importance, if a correct prognosis and treatment is to be followed that knowledge of chemistry involved is absolutely essential. This work considers the various phases necessary to an understanding of these problems.

(MYOCARDITIS). By Don C. Sutton, M.S., western University; Attending Physician, Cook County Hospital; Chief, Cardiac Follow-up Clinic, Cook County Hospital, Chicago, and Harold Lueth, Ph.D., M.D., formerly Instructor Physiology, Northwestern University, Chicago. Illustrated, Cloth, 164 pages. Price $5.00. The C. V. Mosby Company, St. Louis, 1932.

Too often the diagnosis and statement to the patient that "you have heart disease" carries with it, due to misinformation and custom of ages, virtually a death sentence or at least permanent invalidism. It is well to see that Sutton and Lueth take the sensibe and optimistic view of even so dangerous a thing as "Coronary Disease" (Myocarditis). Of course, they are dangerous conditions, but apparent miracles may result from an early diagnosis and proper after care and treatment. It should be said in consideration of these patients that his first enemy is his thoughtless friend who futters along on the side lines, making life one continuous round of unpleasantness and misery.

This monograph should be considered with high favor by the medical profession.

TRANSACTIONS OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA, Third Series, Volume Fifty-three. Issued at Philadelphia and printed for the College in 1931.

These volumes are issued annually by the College of Physicians together with much historical as well as personal data on physicians and the pick of various papers read before meetings of the College during the past year. It also contains the transactions of the College in general.

Among the articles noted are: "Nonspecific Protein Therapy in Surgical Conditions" by Lee Rademaker; this is discussed by John H. Gibbon and Damon B. Pfeiffer. "A Community Health Program" is presented by C. E. A. Winslow. Joseph V. Klauder presents "Recent Experimental Contributions to Syphilis"; John A. Kolmer, presents "Recent Developments in the Serology of Syphilis"; Carroll S. Wright, "Bismith in the Treatment of Syphilis"; J. Frank Schamberg, "Fever Therapy in the Treatment of Syphilis"; Arthur G. Schoch, presents "Newer Arsenicals in the Treatment of Syphilis"; Vaughn C. Garner, presents "The New Conceptions of the Diagnosis and Treatment of Early Syphilis"; Donald M. Pillsbury, presents "The Prevention and Treatment of Prenatal Syphilis"; John H. Stokes, presents "Syphilis as a Problem in Preventive Medicine".

This aside from many other articles in the volume is a tremendously strong series of articles on syphilis.

THE EXPECTANT MOTHER'S HANDBOOK. By Frederick C. Irving, A.B., M.D., Professor of Obstetrics, Harvard Medical School Visiting Obstetrician, Boston Lying-In Hospital. Illustrations, Cloth, 208 pages. Price $1.75. 1932. Houghton Mifflin Company, Boston and New York.

The care of the expectant mother is of the greatest importance. This book is more for the information of the mother than for the physician, so, after the physician has digested it he may deem it worth while to recommend it to his patient.

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